Archives of Dermatology and Syphilology

VOLUME 8 NOVEMBER, 1923 NUMBER 5

THE EDUCATION OF THE SPECIALIST*

HOWARD MORROW, M.D.

SAN FRANCISCO

During recent years, so rapid and remarkable have been the developments in the field of dermatology, so vitally has progress been influenced by discoveries in kindred sciences, that by no group of medical men can more benefit be obtained from annual meetings than by dermatologists. For we bring to these meetings the results of labor in crowded clinical laboratories and conclusions reached after accurate diagnoses and employment of therapeutic means in countless cases. To exchange personal experiences we come from the shores of the Pacific to the coast of the Atlantic, drawn together by that powerful tie—common interest in a profession whose advance depends entirely on investigations of science.

So far-reaching is interest in this world-wide profession that it spans the ocean, and brings from the mother country our highly esteemed colleague—Dr. J. M. H. MacLeod, a clinician of marked skill, an author of international reputation, a lecturer whose instruction has enriched many physicians visiting London, a man whose humanity has brought pleasure to all who know his friendship.

Deeply does your Chairman appreciate the honor of presiding over so distinguished an assembly as the forty-sixth meeting of the American Dermatological Association.

At no time in the history of American medicine has the education of the specialist attracted more attention than at present. The number of specialists is daily growing, for the advance in modern medicine is so tremendous that no one man can master more than a small fraction of it. Since the days of Louis Pasteur, the world's brilliant chemist, whose experiments destroyed forever the old belief in "spontaneous generation," medicine has ceased to be empirical; it has become scientific. Its real progress is in the laboratories.

Before these Pasteurian methods were employed, the actual causes of disease were little known; their treatment haphazard—partly the

* President's address delivered at the Forty-Sixth Annual Meeting of the American Dermatological Association, Ann Arbor, Mich., June 7-9, 1923.

result of experience, partly based on false theory. Scientific study only can discover the "seats and causes of disease" and search out the changes within the body that correspond to the outward symptoms and external appearance. The disproval of the spontaneity of disease has revolutionized prophylactic as well as therapeutic medicine. For this reason the medical training of a specialist must be based on a broad scientific education. He must be familiar with the applied sciences, such as bacteriology, roentgenology, serology, radium therapy, phototherapy and electrotherapy. The physician's knowledge that he lacked this broad field of learning and his desire to avail himself of its advantages, was one of the causes that led to the establishment of group medicine.

GROUP MEDICINE

The specialist's aim is to render service in three fields: (1) to the individual patient; (2) to the medical profession, and (3) to the public at large. Is group medicine the best medium through which he can accomplish these desired aims? What is it that makes a group successful? First, the ability and strength of its leader, for every group is generally formed about one shining light intellectually and financially. (The Mayo Clinic is an excellent example of such a group.) The unselfish manner in which the group functions for the greater benefit of the whole rather than for personal advancement of each member is a necessary factor for success. The human interest must not be eliminated. Can a body of men bring to a patient the same confidence that can be engendered by continual contact with a general practitioner? Physicians can delay their judgment, for the greatest critic—the public —will all too soon and too severely bring its decision.

DANGERS OF GROUP MEDICINE

How many patients can afford to pay various fees to different specialists? How many patients are content to be hustled from office to office, making the slight acquaintance of innumerable physicians without the concentrated human interest of one? Let us not forget that behind all group investigations there must exist the judicial mind which directs the assembled diagnoses into a well fitted whole. Let our scientifically educated men guard against working in a machine-like routine and becoming a profiteering corporation instead of developing into a well-equipped broad personality in a profession whose power for service is unlimited.

If the best results are unobtainable through group practice, wherein lies the future advancement for modern medicine? The answer is in the better trained specialist.

THE TRAINING OF THE SPECIALIST

The best specialists develop from the general practitioner, who, after receiving a degree from a high grade college and serving as an intern in a well appointed hospital, has practiced general medicine in some country district or as an assistant to some well established city physician. Many of our medical schools today are demanding an academic degree as a prerequisite for entrance into a medical department. This is wise, for our physicians should be men and women of broad education and culture, as they should be leaders in their communities.

The medical student should not be allowed to specialize too early in his course. The great error so often committed in college is that the student devotes himself to a particular specialty before a thorough foundation in general medicine has been acquired. When the study of a specialty is begun, the course should not be inadequate, extending over a few weeks. It should be comprehensive and thorough. In many medical schools, the reconstructed curricula calls for a two or even four year course in various specialties. Insufficient technical training proves detrimental to all concerned, the specialist-to-be, the future patient and the standing of the medical profession. After the college course has been completed, the young physician should spend a year, or better two years, as an intern in a modern, well equipped hospital, where under experienced specialists he would have the advantage of constant laboratory and clinical training. Here he could be instructed in the "art of observation" and the technic of recording observations in a brief, accurate manner.

THE WORK OF THE SPECIALIST

The newly graduated physician should be encouraged to start his practice in a small town rather than to borrow money and open offices in an expensive city building. The old time "general practitioner" is invaluable, especially in the country districts, for so many of these are left to chiropractors, midwives and other advertising charlatans. A few years' experience in a thriving country district is advantageous not only financially, but it also yields professionally a wealth of knowledge for later years when the physician wishes to specialize and locate in a large city.

It is of vast importance that the rising generation of physicians start their practice with right standards of life. Moral laws cannot be legislated into the medical profession, but ideals can be educated into it. The serious problem of the education of the specialist begins after he enters practice. When he attends medical school, his education is supervised by a well chosen university faculty. But who can lead him

when once he becomes independent? Only he himself. Now should begin his real professional training for, as Plato said: "Education is a life long business."

FURTHER EDUCATION OF THE SPECIALIST

The young physician attached to a thoroughly established specialist with a wide-reaching practice has a rare opportunity for continuance of medical education; but the unattached young physician must devise his own method of becoming a constant student of medicine.

The very existence of a specialist demands that he be equipped with the latest knowledge not only in his own specialty, but also with all new discoveries in science closely related to his line of work. This can be accomplished only by:

1. Systematic reading. The specialist should read the best journal in his specialty, as well as *The Journal of the American Medical Association,* and at least one of his own state journals. He should be a member of an up-to-date medical library and he should see that the latest scientific books are found on its shelves.

2. The specialist should be an active member of his local medical association. He should help to make it a real clearing house of valuable knowledge—he should be eager to gain new ideas from others and to receive gladly criticism on his own views.

3. He should attach himself to a well organized clinic—give freely of his knowledge to public service.

4. He should visit other clinics of institutions not his own. Invaluable are periods of service in clinics of other cities, especially in other countries.

5. He should help keep the hospitals up to date and make each a center of the best modern equipment—the best hospital organization—and the best medical service.

6. When these means of continued study have been followed he will be of great assistance to the younger men coming into the profession. He should encourage their association with the older well established physicians.

DERMATOLOGY IN THE UNITED STATES

The men in the United States who are teaching dermatology cannot receive too much credit. We are especially indebted to those who have been responsible for introducing into a number of our medical institutions two, three and four year courses in dermatology. The young men herein trained when scattered throughout the larger cities will be a great asset to medicine in general and to dermatology in particular.

The clinics of Fordyce, Ormsby, Wile, Stokes, Engman and Mook, White and others have been of greatest value to the young dermatologist and to the public at large. On this occasion I wish to lay special emphasis on the inspiring teaching of one particular man whose health prevents him from being with us. We all owe George M. McKee our gratitude for his original work, his accurate teaching and for his enthusiasm in keeping radiotherapy in dermatology.

Radiologists without dermatologic training can do a great deal of harm, and the dermatologists who dabble with roentgen ray and radiotherapy with insufficient training can work untold detriment. Radiotherapy should be taught by dermatologists. That our particular specialty should not become narrow, I wish to urge the teaching of the nature of the exanthems, for borderline cases between the eruptive fevers and common dermatologic cases are so interwoven that a positive diagnosis is at times impossible.

DERMATOLOGIC WORK AT THE UNIVERSITY OF CALIFORNIA

On such an occasion as this when we gather to report on the work which we are doing in various cities and educational centers, it might be of value to describe briefly three important subjects to which we have paid especial attention at the University of California skin clinic during the past few years.

CHAULMOOGRA OIL TREATMENT

The esters of the mixed fatty acids of chaulmoogra oil continue to show their superiority over other preparations of chaulmoogra oil in the treatment of leprosy. The propylesters, as prepared by Dr. Ernest Walker of the Hooper Research Laboratory, are less painful and have all the advantages of the other preparations. We have had three patients with early cases of leprosy in whom, after treatment with these esters, all symptoms disappeared and who, so far as we are able to judge, were cured. In advanced cases, their action is slow, while many cases of nodular leprosy do not respond at all.

RADIUM TREATMENT

Radium continues to be one of the most satisfactory therapeutic agents in certain types of cutaneous disease. The value of burying tiny tubes containing radium emanation in various neoplasms increases as our technic improves. For carcinoma of the tongue and sarcoma of the postpharyngeal wall, the value of this procedure is increasing, and it has so far increased as to have practically replaced surgical procedures for these conditions. Radium continues to be the remedy of choice for all types of basal cell carcinoma; it is also indispensable in the treatment of various types of angioma.

THE TREATMENT OF CUTANEOUS GROWTHS

The great majority of cutaneous growths occur on the face so that it should be our aim to remove these growths permanently with as little scarring as possible. Until recently, many of us were of the opinion that it is usually easy to differentiate clinically between the two important types of cutaneous cancer. All standard textbooks and articles by many men state that the clinical symptoms are so characteristic that a basal cell carcinoma can be readily differentiated from a squamous cell carcinoma; also that a cutaneous carcinoma can be readily differentiated from a sarcoma, since the various types of sarcoma have such characteristic symptoms that the special variety may be recognized clinically. All of this may be true in advanced cases in which the borders have a certain characteristic appearance, where pigment is visible, and where the neighboring glands are involved. But in the early cases, when the lesions are small and the duration short, a biopsy will frequently upset many positive clinical diagnoses. This experience has occurred so often that we are inclined to give more weight to the duration of the lesion than to its physical characteristics. Probably all of us have wondered why we have had a recurrence in a supposed basal cell growth, only to find later that we were dealing with a squamous cell carcinoma. If a biopsy had been done, the treatment would have been different. Radical surgical procedures or more intense radiation would probably have prevented the recurrence. In order to reduce to a minimum the possibility of such error, it is our custom to section all growths and examine them microscopically.

Squamous cell carcinoma, if recognized early, is frequently cured. The teaching that a biopsy or a thorough curetting and cauterization of malignant growths are likely to disseminate the growth or hasten its spread, lacks experimental and clinical confirmation. The one exception to this statement is the melanoma. For this type of growth, we advise wide excision or some electric method of destruction. Certainly if an area is curetted and then treated with the proper radiation or cauterization, there is less danger of a recurrence than if such an area, without an exact diagnosis, be treated by acids, carbon dioxid snow, poor radiation, or other methods that frequently not only do not destroy, but even stimulate, the growth.

To summarize this somewhat exhaustive resumé of the treatment of early cutaneous growths, I wish to urge positive diagnoses so that proper treatment may be followed without loss of time. This will be of great value to the patient, to the specialist, and to the medical profession. The more time we devote to scientific labor, the more will our dermatologists help to diminish the suffering of humanity, the more will we contribute to the progress of mankind; for the most important of all our national resources is the health of our people.

DERMATOSCOPY

A STUDY OF BLOOD VESSEL FORM AND ARRANGEMENT IN VARIOUS DERMATOSES *

JEFFREY C. MICHAEL, M.D.
HOUSTON, TEXAS

In a previous article on this subject recording preliminary observations, I [1] wrote "that the dermatoscope offers a method of examination, which falling mid-way between ordinary visual and microscopic examination, contains something of each and adds something of its own." It adds to the other means of diagnosis the ability to scrutinize the living epidermis and superficial region of the derma under comparatively high magnification.

The dermatoscope reveals directly only three constituents of the skin: (1) the horny layer with the epidermal portion of the sweat gland ducts and hair follicles; (2) pigment, and (3) the blood vessels. At times, it is possible to infer the presence of other components and changes in the skin, such as edema and infiltration, by peculiarities in the appearance of the directly revealed constituents, in particular of the blood vessels.

The most striking feature of the dermatoscopic picture is the blood vessels. They appear with such distinctness as immediately to focus attention on them. The only blood vessels discernible are the capillaries of the papillae and the vessels of the subpapillary plexus. These vessels vary in form, size and arrangement, both in normal skin and in various dermatoses.

In normal skin, the appearance of the superficial vascular supply varies in different areas and to a certain extent in different people. Thus, so far as my own observations go, there is no typical vascular picture, no normal to which all variations may be compared. This variability in normal capillary form and arrangement must be taken into consideration in dermatoscopic study. It necessitates comparisons with the normal skin of the individual under examination in an area comparable to the one in which the lesion occurs. The necessity for this is seen, for example, in lupus erythematosus, in which telangiectasia of the superficial capillary plexus is a conspicuous feature of the dermatoscopic picture. But this telangiectasia appears on the face of many

---

* Read before the Section on Dermatology and Syphilology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Michael, J. C.: Dermatoscopy, Arch. Dermat. & Syph. **6**:167 (Aug.) 1922.

persons, particularly in those of the plethoric type. In examination of lupus erythematosus it is therefore important to take into account the normal, or better, permanent telangiectasia, so as to give it its true value in the picture of the disease.

Saphier,[2] who introduced dermatoscopy, in addition to other observations, described the vascular supply of several dermatoses. He recorded features of diagnostic importance in lichen planus, lupus erythematosus discoides, lupus vulgaris and the lenticular syphilid. Kumer [3] and Meldolesi [4] followed Saphier's articles with reports of their studies, but have added little to the latter's findings.

Greater progress, perhaps, would be made in this field if a more suitable instrument was obtainable. I have used the slit-lamp, or corneal microscope of Zeiss which was illustrated and described in a previous article. While furnishing splendid pictures, this instrument

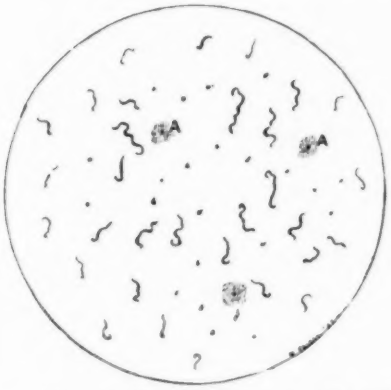


Fig. 1.—Erythema multiforme with moderate vascular reaction. *A*, indicates perivascular effusion.

is too cumbersome for routine dermatologic use. Saphier used a somewhat similar instrument, but it was constructed upon a lighter base and was more adapted to the purpose. The capillary microscope of Otfried Müller has been a failure in my hands, but only because of the poor illumination. However, Müller's idea of combining the illuminating mechanism and the microscope in one small, light and adjustable tube is an ingenious one.

---

2. Saphier, J.: Die Dermatoskopie, Arch. f. Dermat. u. Syph. **128**:1, 1921. Die Dermatoskopie, II, Arch. f. Dermat. u. Syph. **132**:69, 1921. Die Dermatoskopie, III, Arch. f. Dermat. u. Syph. **134**:314, 1921. Die Dermatoskopie, IV, Arch. f. Dermat. u. Syph. **136**:149, 1921.

3. Kumer, L.: Dermatoscopic Observations in Some Skin Diseases, Dermat. Ztschr. **34**:127 (Sept.) 1921

4. Meldolesi, G.: Dermatoscopia, Gior. ital. d. mal. ven. **63**:565 (May) 1922. Abstr. Arch. Dermat. & Syph. **7**:242 (Feb.) 1923.

For the examination recorded herein the skin was cleared with cedar immersion oil, and a magnification of 67 was used. This magnification furnishes distinct pictures and is high enough to allow, under favorable circumstances, observations of the vascular stream in the superficial capillaries. To save repetition, it is mentioned here that observation of the circulatory flow furnished nothing of value. The comparative rapidity of the vascular current could never be determined satisfactorily.

The studies recorded herein embrace dermatoscopic examination of the superficial vascular tree in the angioneurotic, simple inflammatory, and granulomatous skin diseases. A number of the rarer dermatoses which are classified in these groups have not been encountered, and to that extent the study is incomplete. Of the commoner ones, sufficient numbers of each in various stages of the disease have been studied to give a basis for some definite conclusions.

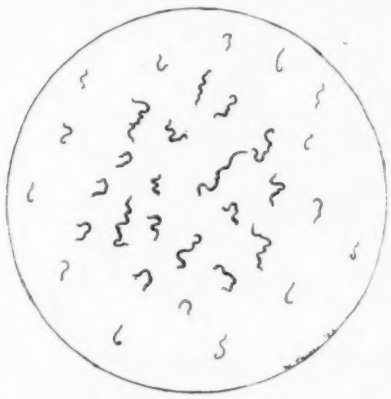


Fig. 2.—Papular dermatitis. The limit of the lesion is distinctly defined by enlarged tortuous capillaries.

DESCRIPTION OF FINDINGS

Urticaria and Angioneurotic Edema.—There is nothing to add to the description of the vascular picture of these diseases given in a previous communication. The essential feature is the indefiniteness of the vessels in the wheal. The obscurity of the capillaries is due to the presence of fluids, which always lowers the visibility of the vessels.

In dermatographia, stroking of the skin by a blunt point was immediately followed by a decided dilatation of the superficial capillaries. At the same time the vessels of the subpapillary plexus became larger and more visible. This vascular reaction extended for some distance beyond the stroked zone. With the commencement of wheal formation a striking change took place. Innumerable opaque, white

points appeared and gradually enlarged. At the time of their appearance these spots were intervascular, but as they enlarged and coalesced the blood vessels were engulfed and disappeared, so that at the height of the development of the wheal nothing was visible but an opaque white area with a few scattered superficial capillaries which had escaped the general submergence.

The explanation of this phenomenon would appear to be as follows: Stroking of the dermographic skin causes a flow of lymph from the smallest lymph radicles, which, continuing, gradually immerses the blood vessels of the lymph saturated skin. The fluid content of the wheal hinders the penetration of light producing the dermatoscopic picture of an opaque white plate.

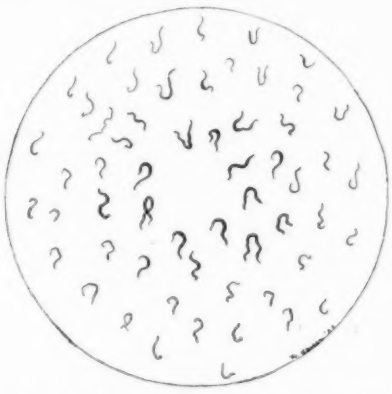


Fig. 3.—Prurigo mitis. The capillaries are moderately dilated. The central vessels are partially obscured by fluid.

Erythema Multiforme.—In this disease the evolution of the lesion has been observed from the earliest manifestations to the full development of the iris type.

The early macule of a few hours' duration shows a moderate dilatation of the superficial capillaries without other change. The papule, likewise, presents a moderate vascular reaction. Some wheal-like lesions show only the slightest vascular change, so slight that it is at times difficult to outline the lesion by attention to capillary dilatation. At the stage in papule formation just before the macroscopic appearance of fluid in the lesion, a fairly marked vascular reaction occurs, evidenced by the appearance of bright red, enlarged capillaries which retain their normal loop form. With the production of vesiculation, the edematous portion of the lesion shows an absence or blurring of the vessels while the vessels outside this zone remain dilated. Many vessels appear as straight lines inclined toward the center of the lesion and some of the

capillaries are represented merely by red points, while others are surrounded and immersed in a nebulous red area, denoting a serosanguineous collection outside of the vessel.

In iris lesions, the blood vessels are invisible in the exudative zone, while the erythematous zones show moderately dilated, isolated capillaries of the same form as in the papular type. The fluid containing areas are bordered by a fairly well defined row of rather straight, distinctly enlarged capillaries. The deeper vessels do not enter the picture.

Erythema.—In examining various members of the erythema group, including erythema solare, erythema calorica and erythema toxicum, no essential difference has been found between them. The erythematous skin can be readily identified by the dermatoscope, which reveals dilated capillaries in it.

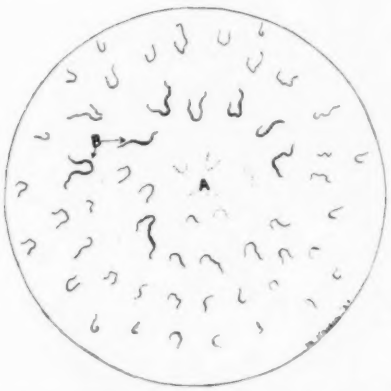


Fig. 4.—Dermatitis herpetiformis. *A* indicates the center of the lesion with obscured vessels as a result of early vesicle formation; *B*, dilated capillaries in the perivesicular zone. The lesion shows a moderate vascular reaction.

The distinction between the sound and inflamed tissues is sharply demarcated by the dilated capillaries. These vessels show no other change than dilatation; loops are regular, fairly evenly spaced, and there are no new blood vessels. The individual vessels are bright red and distinct. With involution of the disease, a gradual return of the capillaries to normal size occurs. The vessels of the superficial plexus show no striking change. They may or may not be discerned, depending on the part of the surface under examination.

Dermatitis (Eczema).—Erythematous eczema shows merely dilated capillaries, differing in no respect from the erythemas. Papular forms commonly show a decided increase in the size of the capillaries, which usually retain the common loop form, but in some lesions become tortuous or take on bizarre forms. The vesicular forms show the same regular dilated capillary forms as the other varieties. Beginning vesicle

formation is indicated by haziness of the central vessels. This early vesicle formation is not observable by naked eye observation. When the vesicle is macroscopically visible, the fluid obscures the vessels in the area in which it lies, the capillaries surrounding the vesicle still remaining dilated and regular. It may be interjected here that all collections of fluid, whether dermal or epidermal, obliterate the vessels because they prevent light transmission.

Prurigo Mitis.—Early lesions of this disease presented moderately enlarged capillary loops of regular form. The vascular reaction was slight, and there were no new blood vessels. The deeper vessels could not be discerned. As the lesion reached its acme, the central capillaries became somewhat indistinct, denoting a collection of fluid in this portion of the lesion. The papule of prurigo mitis does not show as marked

Fig. 5.—Psoriasis. *A* indicates capillary loops with aneurysmal dilatation in afferent and efferent portions.

a degree of vascular dilatation as that of papular dermatitis, a point of some value in differentiation.

One patient with this disease allowed investigation of the effect of scratching on the blood vessels of the lesion. The papule selected showed the vascular picture described above. Moderate rubbing of the lesion caused a decided dilatation of the vessels, which also occurred on superficial scratching, but on excoriation with the effusion of a drop of blood the capillaries quickly became smaller and in an hour had returned to normal size. At this time, the lesion showed a small blood crust on the surface with smaller hemorrhages in various layers of the epidermis, and several of the vessels had become red rigid tubes, probably indicating thrombosis. Twenty-four hours later, the site of the lesion was demonstrable by the dermatoscope only because of the blood crust and the thrombotic vessels, the uninjured capillaries remaining

normal in size and appearance. This observation was duplicated several times. It leads to the conclusion that rubbing and scratching of the prurigo papule has no influence on its development, but that excoriation with consequent thrombosis of the superficial vessels initiates a rapid subsidence of the lesion.

Dermatitis Herpetiformis.—Two patients with this disease have been examined. In a macule of several days' duration a moderate dilatation of the superficial capillaries was observed. Not all the capillaries in the lesion were enlarged. Regular loops were retained, no bizarre forms occurring. No new blood vessels were noted. The deeper vessels were seen as hazy, pinkish streaks, an appearance which can be considered normal. Early vesicle formation, hardly discernible by the naked eye, was determined by the dermatoscopic finding of blurring of the central capillaries.

Fig. 6.—Psoriasis undergoing involution. The capillary loops are more regular in form.

Another case presented a similar picture so far as the capillary forms were concerned. The margin of the lesion was ill defined, there being an intermingling of dilated and normal vessels. The vessels in the central zone of the lesion were blurred because of the poor transmission of light in this area. This appearance is characteristic of early vesicle formation. Surrounding the center of the lesion was a zone in which the capillaries were moderately dilated, without any other abnormality.

Dermatitis herpetiformis has similarities to the prurigo mitis group in that superficial vascular reaction is of slight degree, and the vessels are regular in form and arrangement.

Psoriasis.—The outline of the lesions of psoriasis is distinctly defined by the appearance of dilated capillaries. In early lesions and those at the height of development, the individual capillaries are markedly increased in size, being approximately three times the size of the capil-

laries in the sound skin. The capillary loops are for the most part regular in form, but there are occasional zigzag or other bizarre types. The vessel outlines are distinct. There are no anastomotic vessels and no evident appearance of new vessel formation. In lesions which have reached nummular size, the capillaries are regularly spaced and of more uniform type than in earlier lesions. Recession of the lesion is indicated by a decrease in the size of the superficial vessels and a change in the color tone of the lesion from red to light brown.

In some cases of this disease, a curious appearance of the capillaries has been noted. This consists of a minute dilatation of an aneurysmal form in the course of the capillary. This minute sacculation appears most often near the summit of the capillary loop on either the afferent or efferent vessel, usually on the latter. In many capillaries, two or

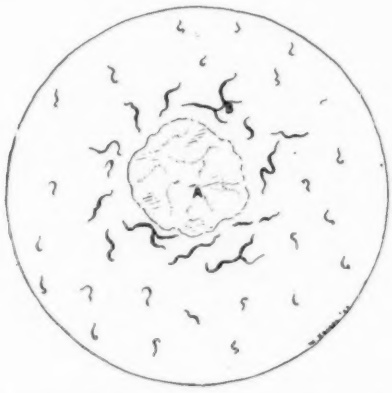


Fig. 7.—An early lesion of dermatitis seborrheica. *A* indicates the central scale obscuring underlying blood vessels; *B*, dilated capillaries with apparently new budding forms.

even three of these small dilatations occur. When two occur, they are placed on each side of the summit of the loop. This sacculation of the capillaries is not confined to psoriasis, as it has been observed in several other dermatoses, particularly in seborrheic dermatitis and in papular eczema, but it is most prominent in psoriasis. While not pathognomonic of psioriasis, it is suggestive of that disease, because capillaries presenting this phenomenon are more numerous in psoriasis than in any other disease so far examined.

The capillary varicosities have not been seen in normal skin. The most plausible explanation of their occurrence seems to be that they are due to pressure on the capillary by perivascular infiltration.

Dermatitis Seborrheica.—The dermatoscopic picture of this disease is not uniform. Early patches commonly show moderately dilated

capillaries of the usual loop form. The vessels of the superficial plexus can be discerned as hazy, red streaks without sharp outlines.

The capillary picture in larger lesions undergoes some deviation from that described above. Many loops have disappeared and have been replaced by fine twiglike ramifying vessels with considerable intercommunication between them. In certain areas the vessels are indistinct, suggesting fluid collections. Aneurysmal dilatation of the capillaries, similar to those described in psoriasis, are present, but not so abundantly as in that disease.

The dermatoscopic picture of psoriasis and seborrheic dermatitis present many similarities. In certain features, however, they differ. In psoriasis, fairly uniform pictures are presented by all patches of the disease, while in seborrheic dermatitis variations not infrequently occur.

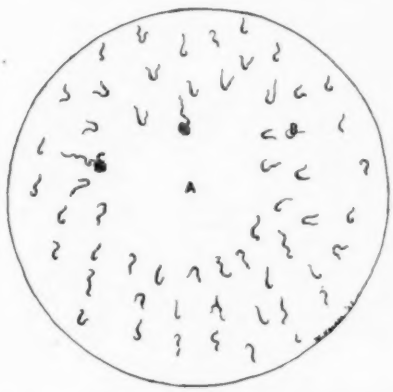


Fig. 8.—Lichen planus. *A* indicates the central area without discernible vessels; *B*, moderately dilated capillary loops; *C*, capillaries with glomerular expansions.

Again, seborrheic dermatitis may present ramifying capillaries of dendritic form, a feature that has not been observed in psoriasis. The preponderance of sacculated capillaries in psoriasis has already been mentioned. It should not be inferred, however, that a positive differentiation between the two diseases can be made by dermatoscopic examination; at the most the differential diagnosis could only be inferred, never decided, by this method.

Pityriasis Rosea.—In early macules which had attained a size of not more than a few millimeters, a slight dilatation of the superficial capillaries appeared. This dilatation is sufficient to allow the lesion to be outlined by the dermatoscope, but is never more than moderate in degree. In the early lesion, not all the capillaries are dilated; a considerable number retain their normal size judged by comparison with

the vessels of the surrounding normal skin. The loops are distinct and normal in shape, showing no bizarre forms. When the lesion reaches the stage of development in which it is annular, the border being slightly raised and red and the center fawn colored with a crinkled surface, the picture varies from that of the early lesions. The center shows no vascular dilatation; if anything, the vessels are less noticeable than in the normal skin. The border of the lesion is distinguished by a moderate enlargement of the superficial capillaries, with no change from the normal form and no evidence of a numerical increase in the blood vessels. The deeper vessels do not enter into the picture.

From the dermatoscopic standpoint, pityriasis rosea may be said to be distinguished from those diseases with which it may be confused, such as psoriasis or seborrheic dermatitis, by the moderate vascular reaction which it evidences.

Fig. 9.—Sarcoid. *A* indicates a superficial large vascular trunk; *B*, branching, undulating subepidermal vessels; *C*, capillary loop; *D*, vessel of subpapillary plexus.

Rosacea.—The erythematous lesion of the disease shows a red haziness which renders the vessels less distinct than normal. The capillary loops have disappeared for the most part, but there are many tortuous superficial vessels intertwining one with the other. These vessels are not appreciably dilated.

Pustular elements show the grayish area representing the pustule, which obliterates the vessels, and about the periphery of the pustule considerably dilated vessels, most of which still retain the loop form.

Lichen Planus.—The plane papule of lichen planus at the acme of its development, or, in fact, at any stage of its evolution, shows distinct papillary capillaries which are moderately dilated. The lesion is sharply defined by the sudden increase in the size of the capillaries in it, com-

pared with the vessels of the unaffected skin. The capillaries are dark crimson and appear as if embedded in a clear sand colored medium. The capillary loops are isolated, and there are no anastomotic vessels nor a numerical increase in the superficial vessels of the lesion. The capillaries present no bizarre forms. The vessels of the superficial plexus may be seen, at times, and present no apparent abnormality except dilatation.

The characteristic feature of the dermatoscopic picture in the plane papule of lichen planus is the invisibility of the vessels in the central zone of the lesion. Besides the central area, the obliteration of the capillaries occurs in many lesions in lanes or striae which traverse the papule in various directions. The central free zone varies in size, though usually it occupies approximately one fifth of the entire area

Fig. 10.—Lupus erythematosus discoides. *A* indicates distinct large vascular trunks; *B*, plugged follicle (diagrammatic); *C*, superficial vessels. Note absence of capillary loops.

of the papule. The linear areas which appear free of vessels correspond to the striae of Wickham. The invisibility of the vessels in the central zone as well as in Wickham's striae is due to the increase of the keratohyaline layer at these places. As is well known from histologic study, the grayish streaks designated Wickham's striae are due to marked hypergranulosis, a feature which is likewise present in the epidermis of the central delle of the lichen planus papule.

As involution sets in, the superficial vessels become smaller and less distinct. The central vessels do not appear until involution is practically complete, at which time all the vessels have returned to their normal size. The brownish pigmentation of the lesion obscures the superficial vessels to a considerable degree.

Acuminate papules occasionally show obliteration of the vessels in the central zone. In squamous patches of the disease, the form of the individual capillaries is similar to that noted in the plane papule. Areas in which the superficial vessels are invisible are found, but these are unevenly spaced and do not appear with sufficient regularity to indicate that the papules still maintain their individual features in the confluent lesion.

Of the rarer forms of lichen planus, it has been possible to examine only the hypertrophic variety. In one case of this type, the large violaceous papules showed the regular loop form of dilated capillaries, but the vessels appeared indistinctly, probably because of the increase of pigment in the lesion. Central vascular obliteration was not observed.

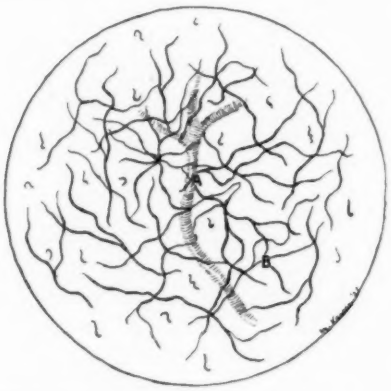


Fig. 11.—An atypical picture of lenticular syphilid. *A* indicates a large superficial vessel; *B*, new blood vessels with numerous anastomoses.

Pruritus with Lichenification.—This condition shows a vascular reaction of low degree; the superficial capillaries being slightly dilated, without a numerical increase, and lacking unusual capillary forms. In many cases of this disease, pigmentation so obscures the picture that the superficial capillaries are nearly invisible.

Sarcoid.—One case of the superficial, or Boeck, type of this disease has been examined. The lesions selected for study were typical of the disease at its acme, being bright red, firm nodules.

The superficial vascular supply presented marked changes from the normal. Long, narrow, branched, tortuous vessels ramified throughout the upper cutis. Only a few capillary loops remained. They were moderately dilated. The deeper vessels were distinctly seen, and appeared to be more numerous than in the unaffected skin. Branches connecting the superficial and deeper vessels were fairly numerous.

The numerical increase in the superficial vessels as well as the form in which they were present indicated new blood vessel formation. Occasionally a comparatively large superficial vascular trunk was observed.

The picture presented certain similarities to that of lupus erythematosus. The presence of long branching vascular forms in the superficial cutis, the prominence of the vessels of the superficial plexus and occasional large superficial vascular trunks are common to each. Sarcoid, however, shows a few remaining intact capillary loops, whereas in lupus erythematosus the loop form of capillary is rarely, if ever, seen.

Lupus Erythematosus Discoides.—The dermatoscopic picture of the four cases examined has been uniform. The individual lesions examined ranged in duration from two weeks to several months, but it appears that once the clinical features of the disease are present, the dermatoscopic picture also is well defined.

Lupus erythematosus has a characteristic appearance under the dermatoscope, sufficiently individualized to be of value in differential diagnosis. Saphier, likewise, reached this conclusion.

Under the dermatoscope the most prominent feature is the appearance of fairly large vascular trunks in the superficial cutis. These vessels run in a plane parallel with the surface layer, and follow a tortuous course with long curves. Branches are given off which continue for the most part in the same plane as the parent vessel. The distinctness of the vessels is striking. The plugged follicles which are part of the picture of lupus erythematosus discoides show as cone shaped, yellowish bodies, which can be followed into the deeper parts. The larger vessels surround each follicle, usually completing the circle by anastomotic branches. It is characteristic of the disease that the superficial capillary loops have disappeared. In a well formed lesion, I have never noted their presence, though Saphier mentions that they are occasionally present.

Acne Vulgaris.—The comedo does not cause a vascular dilatation in the area contiguous to it. Beginning papules are discernible because of the presence of one or more dilated capillaries immediately adjacent to the comedo. As the lesion progresses, the surrounding vascular reaction becomes more evident, all adjacent capillaries showing dilatation, but without any other striking feature. Pustules present as gray, opaque areas with dilatation of the capillaries surrounding it. There are no new vessels, the vascular reaction, however, being intense.

Scabies.—While the burrow presents an interesting picture, it does not cause any vascular reaction in the adjacent tissue. The papule or papulovesicle of scabies shows a moderate dilatation of the superficial capillaries. The papular lesions present pictures similar to those of prurigo mitis. Eczematized areas have the same appearance as the

corresponding type of dermatitis. The influence of the acarus on the superficial vascular system has not been determined because the insect was never identified by dermatoscopic examination.

Dermatophytosis.—In the vesicular types of the disease resembling dyshidrosis, no dilatation of the vessels is observed. The vesicle itself obscured the vessels. Vesicopustules show no surrounding dilated vessels. The eczematized areas present changes similar to those seen in erythematous dermatitis. It can be said that ringworm of the extremities presents nothing characteristic of the disease so far as dermatoscopy is concerned.

Tinea corporis shows moderately dilated superficial capillaries. The deeper vessels are discernible without presenting abnormal features.

There is no new vessel formation.

Syphilis.—The macular syphilid presents regular vessel forms with moderately dilated loops. The vessels are distinct. There are no new blood vessels. This picture is common to simple inflammatory diseases.

I have had no opportunity to examine bullous or pustular forms of the disease. Lenticular and nodular syphilids give essentially the same pictures under the dermatoscope. Saphier has called attention to the typical picture of lenticular syphilis and has noted that the dermatoscope reveals characteristics in the vessel form and arrangement that distinguish it from lupus vulgaris. This characteristic is the glomerular expansion of the capillary loops without dendritic ramifications. Lupus vulgaris shows numerous branching vessels forming dendritic ramifications with many fine anastomotic vessels.

In the three cases of lenticular syphilis that were examined, two presented a vascularization similar to that described by Saphier, but another was so dissimilar that I have illustrated it. The patient was seen in the Houston City Clinic with typical lenticular syphilis. A strongly positive Wassermann reaction was obtained, and the result following treatment proved the clinical diagnosis. Several lesions on the forehead were examined, all presenting similar pictures. They showed numerous ramifying and branched vessels forming a network apparently immediately under the epidermis. A number of large trunks were seen lying at a somewhat deeper level, and the superficial and deep vessels were connected by other vessels. This observation resembled more the description and illustration that Saphier gave of lupus vulgaris than of lenticular syphilis.

Leprosy.—In one case of the maculo-anesthetic type, several brownish macules of approximately six months' duration were examined. There was no variation from the normal in the vascular picture, the only discernible change consisting of an increase in the pigment of the involved area.

SUMMARY AND CONCLUSIONS

These findings show that changes in the superficial skin capillaries occur in disease conditions in four ways: (1) dilatation without other change, (2) dilatation with special changes in the individual capillary form (aneurysmal dilatations, glomerular expansions), (3) new blood vessel formation (twiglike ramifications, intercommunicating vessels), and (4) large vascular trunks (telangiectasia).

In diseased states only one of these changes may occur, or there may be a combination of two or more of them. In the diffuse erythemas, dermatitis, prurigo mitis and dermatitis herpetiformis, simple vascular dilatation alone has been noted. In the two latter, as well as in all vesicular, pustular, or bullous diseases, the vessels are invisible in the fluid-containing areas. Both fluid collections and hypergranulosis may produce dermatoscopic invisibility of the vessels. The only condition so far examined in which increased thickness of the granular layer causes this change is lichen planus.

In psoriasis and seborrheic dermatitis, and less frequently in papular eczema, simple vascular dilatation occurs, and in addition aneurysmal formations appear on some of the capillaries. Psoriasis shows this feature more prominently than the other two diseases, a point of some importance in the diagnosis of that disease. Seborrheic dermatitis, occasionally and in some patches, presents twiglike ramifying vessels intermingling with dilated capillary loops. This picture has not been observed in psoriasis. Pityriasis rosea may be differentiated from psoriasis or seborrheic dermatitis by the slight vascular dilatation which occurs in it.

In lupus erythematosus and sarcoid marked disorganization of the superficial vascular supply was noted. These diseases have many features in common in the dermatoscopic picture, the most striking changes being in the presence of moderately large branching vessels in the papillary body. In sarcoid, a few capillary loops remain, whereas they are always, or practically always, absent in lupus erythematosus.

The lenticular syphilid is characterized by glomerular expansion of the superficial capillaries. The picture is not constant or pathognomonic of this disease, as Saphier at first thought. I have seen one case of this disease in which an atypical picture was observed. In this case the findings more nearly approached those of lupus vulgaris than of nodular or lenticular syphilis.

Two interesting observations of concomitant features of diseased states were examined. One concerns the effect of rubbing, scratching and excoriation on the papule of prurigo. It was found that rubbing and ordinary scratching had no effect on the evolution of the papule, so far as that is observable by the dermatoscope, but that excoriation

with consequent thrombosis of the superficial capillaries stopped the development of the lesion and led to its rapid subsidence.

The other observation concerns the changes noted during the evolution of the dermographic wheal. It was found that small opaque spots appeared in the tissue between the blood vessels, and that as these opaque areas enlarged and coalesced, the blood vessels were obliterated, the end-result being an opaque white area. This is interpreted as denoting that stroking the dermographic skin causes a stimulation of the lymphagogic activity of the small lymph radicles leading to a lymph saturation of the skin, which prevents light transmission and gives the final picture of an opaque white plate.

The findings in the other diseases that were examined furnished nothing of special import.

In regard to the dermatoscope, a light, compact, portable instrument would be advantageous. In devising an instrument especially adapted for dermatologic use, it would be inadvisable to sacrifice the slit-lamp type of illumination.

Finally, it may be said that dermatoscopy, while new and only partially explored, evinces great potential value. Studies, such as those which form the basis of this paper, on the variations in the superficial vascular picture of pathologic states are only one of the ways in which this new means can be used. For instance, it may be, and already has been, used to study capillary blood pressure and the manner of the absorption of mercurial inunctions. It appears to be particularly adapted for the investigation of the physiologic and therapeutic chemistry of the skin.

314 Carter Building.

FERMENTATION REACTIONS OF THE RINGWORM FUNGI

I. DIFFERENTIATION OF THE TRICHOPHYTA AND ALLIED GENERA FROM OTHER FUNGI *

J. G. HOPKINS, M.D., AND K. IWAMOTO, M.D.

NEW YORK

Certain fermentative characteristics of the ringworm fungi seem to differentiate them from other organisms of similar morphology. The term "ringworm fungi" is a convenient one for the group which comprises the allied genera *Achorion, Microsporon, Trichophyton* and *Epidermophyton,* the members of which are the infective agents in favus and the various types of ringworm.

The identification of these organisms by methods in vogue is not easy. For example, it seems impossible to define the genus *Trichophyton* by known morphologic and cultural characteristics so as to include all members of that genus and exclude all other fungi. It was for this reason that we have attempted to determine whether fermentation reactions which have found such a wide use in bacteriology and have been successfully applied by Castellani [1] to the moniliae might not also be helpful in the study of the dermatophytes.

Very little previous work has been reported in this field. It has long been known that the addition of carbohydrates to culture mediums favors the growth of many of these fungi, but the process by which the carbohydrates is utilized is not known. The prevailing opinion seems to have been that these fungi do not cause fermentation. Some years ago Bodin [2] and others observed that certain species of *Microsporon* and *Trichophyton* utilized glucose and maltose, but not saccharose. Little attention has since been paid to this observation, although, as we hope to show, it seems to be a rather important characteristic of this group of organisms.

The fact that these parasites produce proteolytic enzymes has attracted more attention. MacFadyen [3] observed that several species produced a gelatin-liquefying enzyme which was set free in the culture medium. The same organisms grew on keratin but did not digest it perceptibly, although they seemed to alter its solubility. He found

* From the Department of Bacteriology, and the Department of Dermatology and Syphilology, Vanderbilt Clinic, Columbia University.

1. Castellani: J. Trop. M. **23**:101, 117 and 133, 1920.
2. Bodin: La Prat. Dermat., Paris, Masson, **1**:803, 1900.
3. MacFadyen: J. Path. & Bacteriol. **3**:176, 1896.

no digestion of fibrin or coagulation of milk. Roberts [4] studied the invasion of hairs placed on growing cultures and convinced himself that the *Trichophyton* digested keratin and that some could digest only the medullary portion of the hair, others the cortex also. These observations were corroborated by Pelagatti.[5] Roberts [6] also confirmed MacFadyen's observations on the digestion of gelatin. Bodin [7] observed that the *Microsporon* differed from the other members of the group in producing relatively feeble gelatin-liquefying ferments.

These pioneer observations have not been followed up.

PRELIMINARY EXPERIMENTS

Our first studies on the utilization of carbohydrates were made by testing the mediums on which the fungi had grown for loss of the fermentable substance. Some preliminary experiments with a pleomorphic achorion showed: (1) That dextrose to the amount of 4 per cent. was completely removed from culture mediums in from seven to eight weeks; (2) that the reaction of 4 per cent. dextrose peptone water was unchanged, while that of 1 per cent. dextrose or plain peptone water shifted slightly toward alkaline, and (3) that a volatile alkali, probably ammonia, was produced.

A study of a number of strains on six test substances demonstrated that some carbohydrates were utilized and others not; also, that specific differences in such utilization could be detected in fungi which were morphologically similar. The technic was, however, cumbersome.

CURRIE'S AGAR METHOD

It was found more practicable to attack this problem by selecting a medium on which the fungi would grow in the presence of a suitable carbohydrate but would not grow without such a carbohydrate. Probably any of the inorganic synthetic mediums, such as Raulin's fluid, would have served this purpose, but we chose a simpler formula devised by Currie [8] for the study of acid production by aspergilli.

	Gm. or C.c.
Ammonium nitrate	2.5
Diacid potassium phosphate	1.0
Magnesium sulphate (crystals)	0.25
Water	1,000

To this was added 1.5 per cent. of agar, 1 per cent. of the carbohydrate to be tested, and 0.5 per cent. of Andrade's indicator.

4. Roberts, Leslie: J. Path. & Bacteriol. **3**:300, 1896.
5. Pelagatti: Trans. 3rd. Inter. Dermat. Cong., London, 1896, p. 590.
6. Roberts, Leslie: Brit. M. J. **1**:13, 1899.
7. Bodin: La Prat. Dermat., Masson, Paris, **1**: 804, 1900.
8. Currie: J. Biol. Chem. **31**:15, 1917.

Three plants of the same organism were made on each tube. The cultures were grown at room temperature and observed at intervals for two months or longer.

On this medium organisms which exhausted a sugar from peptone broth grew well with the same sugar added; whereas, on control tubes of plain Currie's agar they grew scarcely at all, or, at most, sent out a faint haze of mycelia into the substance of the medium. The contrast between two such tubes was as a rule quite definite.

As we were quite in the dark as to the fermentative abilities of these organisms, it was impossible to predict with what carbohydrates significant differences might crop out. Consequently we made our tests on a series of seventeen different test substances.

EVIDENCE OF ACID PRODUCTION

On Currie's agar tubes, fungi which grew well on any particular sugar usually produced sufficient acid to cause a distinct change of the Andrade indicator to red. This change in reaction appeared after a variable interval which was somewhat dependent on the rapidity of the growth of the organism. In most instances the reaction later swung back to alkaline, as evidenced by a fading of the red color. Transitory or prolonged periods of acidity were found respectively fairly characteristic of certain strains. The fact that this acid production had not been detected on the mediums previously employed seemed to be explained by an experiment in which peptone was added to Currie's agar containing a fermentable sugar. In this case there was no reddening of the indicator in the tubes containing peptone, although control tubes without peptone reacted positively. The general parallelism between transitory acidity and active growth seemed to indicate that the carbohydrates which were utilized by a particular fungus were utilized by a process of acid fermentation. It seemed probable that the acid production was masked by the production of alkali from peptone, if this substance were present, and that even in our inorganic medium sufficient alkali was formed from the ammonium salt to cause an ultimate reversal of the reaction in the medium. We could not exclude the possibility that the change back to alkaline might be due to a further breaking down of the organic acids produced in fermentation, for example, to carbon dioxid which was given off in the air.

VARIETIES OF FUNGI OBSERVED

The observations of greatest interest to us were those made on nineteen different types of dermatophytes kindly sent us through the courtesy of Professor Sabouraud. These included the more important types which he has described and named. We were particularly inter-

ested in the results of the fermentation tests on these strains, because we have frequently been uncertain in the identification by his standards of cultures which we have isolated.

We have also studied over 100 strains of ringworm fungi obtained in this country. Most of these cultures we isolated from cases in the clinic of Dr. J. A. Fordyce, but for specimens of rarer varieties we are indebted to Dr. F. A. Weidman, Mr. R. S. Hodges, Dr. C. A. Williams and others.

The reactions of these hair-invading organisms were compared with those of about twenty varieties of saprophytic fungi, including the more common laboratory contaminants. We were fortunate in obtaining, through the kindness of Prof. R. Thaxter, seven strains of saprophytic gymnoascacei, which resembled the ringworm fungi morphologically more closely than any of the fungi which we found as contaminants in our cultures.

CHARACTERISTICS OF THE RINGWORM GROUP

Tested in the manner described above, the fungi of the ringworm group showed certain common characteristics:

First, none of them was able to utilize saccharose, lactose, arabinose, xylose, or dulcite even after several month's incubation. On the other hand, all the control strains showed growth and acid production on one or more of these substances within the first two weeks.

Second, most of the hair-invading strains were able to utilize d-mannite, d-mannose, d-glucose and d-fructose. With some species, evidence of utilization of these sugars only appeared after incubation for two months or longer, and even then was inconstantly obtained. Others showed active growth and acid production within two weeks, but with all the utilization of the sugars was slower than in the case of the saprophytic strains.

An old laboratory strain of *Sporothrix beurmanni,* an organism which shows a type of pathogenicity different from that of the ringworm fungi in that it does not attack hair or epidermis but invades the lymphatics and other deeper structures, behaved differently from either of the preceding groups. It did not grow luxuriantly on Currie's agar with any sugar, as did the saprophytic strains; but, nevertheless, within the first week it showed growth on most of the carbohydrates, which was definitely better than on a control tube without sugar. It also acidified the saccharose tube, which served to differentiate it sharply from the ringworm group.

Two strains of our own also deserve separate mention. They were hyphomycetes isolated from skin and finger nail lesions. Morphologically, they did not correspond to any variety of *Trichophyton* which we have seen described, nor did they resemble any of the common

saprophytes. They were isolated so readily from ringworm-like lesions that we suspected that they were pathogenic. Inoculation of guinea-pigs was unsuccessful, but this does not rule out the possibility of their being pathogenic for man. On fermentation tests these strains behaved as did the saprophytes; that is, they grew well and produced acid within the first week and utilized pentoses and also lactose and saccharose. It may be that they form an exception to the general rule that fungi which produce skin lesions do not ferment these sugars, but these reactions seem sufficient ground for classifying them apart from the group of true ringworm fungi. In the accompanying table they are listed as "Pseudotrichophyton A and B."

With these possible exceptions, all the ringworm fungi which we have studied can be distinguished from the common saprophytic types by these tests.

*Fermentation Reactions of Ringworm Fungi Contrasted with Representative Strains of Other Lower Fungi**

	d-Mannit	Dulcite	Saccharose	Lactose	Raffinose	Xylose	l-Arabinose	Rhamose
Fungi of ringworm group	0 or ++	0	0	0	0	0	0	0
"Pseudotrichophyton A"	++	0	++	+	++	++	++	++
"Pseudotrichophyton B"	++	0	++	+	+	++	0	0
Sporothrix	+	+	+	+	0	+	+	−
Aerothecum	++	++	++	++	++	++	++	++
Gymnoascus	++	0	++	0	0	0	0	++
Penicillium	++	++	++	0	++	++	++	++
Cephalosporon	++	++	0	++	0	++	++	++

* Medium: Currie's agar with 1 per cent. carbohydrate; time of incubation: 1 week.
* These reactions are recorded for only one species of each of the genera listed. When more than one species was tested, specific differences were found, but the reactions in no case correspond to those of the ringworm fungi.

As all of our saprophytes fermented either lactose or saccharose, it is possible to make this differentiation by the employment of only two tubes: one of a double sugar medium containing 1 per cent. each of lactose and saccharose in Currie's agar, and a second of plain Currie's agar. An organism of the ringworm group will fail to develop on the first tube, or at most show a faint submerged growth no greater than on the second tube; whereas any of the common saprophytes will develop rapidly and produce acid within the first week.

It should be kept in mind that we have not, of course, tested the entire multitude of species of lower fungi, and it is probable that a search would reveal saprophytic groups that also fail to ferment these disaccharids. Indeed, Castellani has found moniliae which do not ferment them in his peptone water medium. All the moniliae we have encountered in skin cultures have, however, utilized one or the other of these sugars. It seems at least that the foregoing statement holds true for all types of saprophytic fungi common on the skin and in laboratory dust which are likely to contaminate cultures from skin

lesions; also for certain saprophytic species of *Gymnoascacei,* to which family, in the opinion of Matruchot and others, the ringworm fungi belong. It is to be hoped, then, that such a test will be of aid in determining whether fungi which are encountered in cultures from skin lesions belong to the ringworm group.

More detailed tests which serve to divide the ringworm fungi into three fermentative groups and to aid in the recognition of certain species will be made the subject of a subsequent report.

SUMMARY

1. The experiments reported show that most fungi of the ringworm group utilize d-mannite, d-mannose, d-glucose and d-fructose by a process of acid fermentation, a fact which has probably escaped observation because the presence of peptone in the medium conceals the production of acid.

2. None of these fungi ferments lactose, saccharose, xylose or l-arabinose. In this respect they differ from the saprophytic types studied, all of which fermented one or more of these sugars.

3. The hair-invading organisms may be distinguished from the common skin saprophytes and air contaminants by use of a medium containing lactose, saccharose, inorganic salts and an indicator. On this medium the ringworm fungi fail to develop, but the saprophytes grow and produce acid.

XXXI.—XANTHOMA DIABETICORUM TREATED WITH INSULIN*

REPORT OF CASE

MARTIN F. ENGMAN, M.D.

AND

RICHARD S. WEISS, M.D.

ST. LOUIS

In our experience, the lesions of xanthoma diabeticorum usually yield to the ordinary treatment directed toward the primary diabetic condition, but they yield rather slowly; in fact, it is usually a question of several months before they involute completely. It has been our privilege to observe a recent case of this disease and its rapid involution under treatment with insulin. The patient was in the Barnes Hospital in the service of Dr. William Olmsted, and we are indebted to him for permission to report it.

CASE REPORT

History.—A white man, aged 23, entered the hospital on Feb. 13, 1923, in diabetic coma. About six weeks before admission, a papular eruption appeared on his arms. A few days later the eruption appeared on his legs and scalp and very many new ones appeared in all of these locations. There were no subjective symptoms.

At the time of his admission his respiration was of the "air hunger" type. He was barely conscious. There was an acetone odor to the breath. He was very much emaciated, and the skin was dry and cold.

Examination.—There was a papular eruption scattered profusely over the hands, forearms, feet, legs and scalp. The lesions were profuse over the limbs, particularly around the joints. They were salmon colored nodules from 2 to 12 mm. in diameter, oval and circular in shape. The tops of many of them were covered with a dirty thin crust which was adherent. There were a few scattered lesions on the fingers and dorsa of the hands, many in the region of the elbows posteriorly, many over the buttocks and thighs, and an enormous number in the region of the knees.

The blood contained 3,550,000 red cells and 16,000 white cells. The hemoglobin was 85 per cent. The blood sugar was 0.305. The carbon dioxid volume percentage was 10, and there was marked lipemia and lipemia retinalis. The blood plasma was thick and creamlike. On Feb. 13, 1923, the total blood fat was 4,500 mg. per 100 c.c. and the blood cholesterin was 1,800 mg. per 100 c.c. On

---

*Studies, reports and observations from the dermatological departments of the Barnard Free Skin and Cancer Hospital and the School of Medicine, Washington University, St. Louis, Mo., U. S. A., service of Drs. M. F. Engman and W. H. Mook.

Feb. 19, 1923, the total blood fat was 2,370 mg. per 100 c.c. and the blood cholesterin was 1,115 mg. per 100 c.c. On Feb. 26, 1923, the total blood fat was 2,000 mg. per 100 c.c. and the blood cholesterin was 1,250 mg. per 100 c.c. The sugar in the urine varied from 15 to 30 gm. per day, and the ferric chlorid test was markedly positive. We desire to call attention here to the enormous increase in the total blood fat and cholesterin. The normal limits for blood fat are said to be from 300 to 700 mg. per 100 c.c. of blood; this case varied between 2,000 and 4,500 mg. The normal cholesterol, so far as it has been determined, is approximately 300 mg. per 100 c.c. and may vary, perhaps 100 mg. in either direction. This case varied between 1,115 and 1,800 mg. per 100 c.c.

Treatment and Course.—The treatment consisted of large doses of insulin daily, 8 per cent. of sodium bicarbonate solution intravenously and the usual dietetic measures as outlined in the table.

Doses of Insulin and Diet

1923	Insulin Units *	Diet		
		Protein	Fat	Carbohydrate
February 13	33	....	....	....
February 14	110	4.8	1.5	60.0
February 15	70	....	....	....
February 16	80	....	....	....
February 17	67	....	....	....
February 18	80	50.0	100.0	50.0
February 19	80	....	....	....
February 20	60	....	....	....
February 22	60	....	....	....
February 23	60	....	....	....
February 24	60 sugar-free	....	....	....
February 25	60	....	....	....
February 26	40	.. .	....	....
February 27	40	....	....	....
February 28	40	.. .	...	....
March 1	40	....	....	....
March 2	30	...	....	....
March 3	30	....	....	....
March 4	30	50.0	150.0	50.0
March 5	30	....	....	....
March 6	30	....	....	....
March 7	20	.. .	....	....
March 8	20	....	.. .	....
March 9	20	.. .	....	....
March 10	20	. .	....	....
March 15	..	50.0	175.0	50.0

* Lilly units.

This patient entered in diabetic coma in a desperate condition and death seemed inevitable. The day after insulin treatment was started, he was conscious and rational, and thereafter recovered his strength with extreme rapidity. On the seventh day, the skin lesions were involuting rapidly. The involution was peculiar in that the surface and center of the lesion shriveled up and dropped off, leaving a ring of xanthoma about one-half the size of the original lesion. The ring then slowly absorbed.

The patient became sugar-free on the eleventh day. The carbon dioxid volume per cent. became normal, and the blood sugar stayed within normal limits on a diet of protein, 50 gm.; fat, 175 gm.; and carbohydrate, 50 gm., after discontinuing insulin treatment. When seen in the outpatient department on April 21, 1923, he was sugar-free, and all of the xanthoma lesions had completely involuted, leaving brown pigmented spots.

XXXII.—A CONTRIBUTION TO THE TREATMENT OF PEMPHIGUS*

ROBERT H. DAVIS, M.D., AND WILLIAM D. DAVIS, M.D.

ST. LOUIS

TYPES OF PEMPHIGUS

Pemphigus is usually classified as: (*a*) acute, (*b*) chronic, (*c*) foliaceus and (*d*) vegetans. Acute pemphigus includes the septic, and usually rapidly fatal, cases and the postvaccinal ones; the chronic is identical with pemphigus vulgaris, and the foliaceus and vegetans groups are differentiated by their well-known characteristics.

As regards the prognosis and treatment of the various groups, a review of the opinions of some authorities is of interest, and besides has a direct bearing on our paper.

(*a*) *Acute Pemphigus.*—Hardaway, Stelwagon, Hartzell, Darier, Pusey, Grindon and Ormsby regard the outlook as grave—usually fatal. Stelwagon says that patients with acute cases that recover usually have not true pemphigus, although an acute case may become a chronic one, but he believes that patients with cases of all types unattended by fever or constitutional symptoms get well, a statement which (it seems to us) means that patients with mild cases may recover. He and Crocker also observe that the prognosis is better in children. This has not been the case with us, especially in postvaccinal cases, to which our experience in children has been limited. Mook, from his unusual experience in such cases, concurs in this opinion. Crocker says children having albuminuria or severe, and especially gangrenous, lesions usually die.

(*b*) *Chronic Pemphigus.*—The prognosis of pemphigus vulgaris is considered doubtful by Hartzell, Hardaway and Grindon, Ormsby, Sutton, Knowles, Pusey, Hyde and Montgomery, Stelwagon and Crocker, although the latter is unique in the authorities consulted in saying: "That the majority of cases of pemphigus recover, though several recurrences in future years are to be expected." All are agreed that this is the type in which remissions especially occur. Knowles and Stelwagon say, however, that periods of complete freedom from lesions are not common, although such intervals occur. The length of these intervals is variously stated, usually from several weeks to several

---

* Studies, reports and observations from the dermatological departments of The Barnard Free Skin and Cancer Hospital and the School of Medicine, Washington University, St. Louis, Mo., service of Drs. M. F. Engman and W. H. Mook.

months. Pusey says "up to a year," but most men do not commit themselves, saying remissions of varying length occur. Darier reports a case of pemphigus vulgaris in which there was a remission of several years with later recurrence and death. He considers pemphigus vulgaris usually fatal, but admits that mild forms rarely occur. Sherwell [1] reports a similar case of pemphigus foliaceus recurring after one, and again, after eleven years, beginning at the age of 7. These are the only cases that we have been able to find in which there was a remission of such length. Sherwell's case is unique.

(*c*) *Pemphigus Foliaceus and* (*d*) *Pemphigus Vegetans.*—The prognosis in pemphigus foliaceus and pemphigus vegetans is given as grave; in fact, some say usually or always, fatal. Ormsby, Hardaway and Grindon, Hartzell and Stelwagon express the latter opinion, although Stelwagon, quoting Sherwell's case, says exceptionally long remissions may occur in the foliaceus type. Pusey considers the foliaceus type as fatal.

TREATMENT

As regards treatment, arsenic is recommended by most authors as the remedy of choice. Hutchinson believes that it is "a specific for the state of health on which relapsing pemphigus depends." This represents one extreme. Kaposi is opposed to its use, and Hyde and Montgomery recommend its use—if used at all—with caution, but leave the door open by saying it is of advantage in appropriate cases. Crocker says that it controls, but frequently does not cure, and that it helps children especially. Hartzell considers it most helpful, but not curative, while Stelwagon says it does at times cure after administration over long periods, and that its use should be continued for some time after apparent cure. It is usually given in the form of a solution of potassium arsenite (Fowler's solution), beginning with a small dose and gradually increasing the dose to the limit of tolerance. Arsenic has been used in the form of sodium cacodylate and especially arsphenamin, Sutton reporting a cure from the latter remedy, and Darier saying that its use and that of autoserum are distinctly worthy of trial in a disease usually fatal. Crocker advised 15 grains (0.97 gm.) to 30 grains (1.95 gm.) of salicin three times a day. Hardaway reported a case of cure after using tinctura belladonnae foliorum. Leszczynski [2] reported favorably on the intravenous use of quinin. Iron and antipyrin are also recommended as worthy of trial. The combination of laudanum with arsenic and the use of strychnin in asthenic cases have also been advised.

---

1. Sherwell: Arch. Dermat., 1877, p. 97; J. Cutan. Dis., 1889, p. 453.
2. Leszczynski: Arch. Dermat. **114**:129, 1912; **118**:633 (Nov.) 1913. Abstr., J. Cutan. Dis., March, 1915, p. 229.

The treatment we are presenting in this paper consists of intravenous injections of iron cacodylate, 1 grain (0.06 gm.) to 5 c.c. of the vehicle. Such ampules are stocked by several of the houses which specialize in medicaments for intravenous therapy. The injection is given triweekly. No local or general reaction has been observed. In addition to the above, 1.5 c.c. of coagulen is given on alternate days. In all cases except one, it was given on the same days as the iron and arsenic solution. In that case (Case 1) it was given on the day following. This preparation is given subcutaneously. No local or general reaction has followed its use in any case. It is an extract of blood platelets.

REPORT OF CASES

Case 1.—Mrs. L., white, aged 50, was first seen on Dec. 24, 1920, when she presented various sized, superficial vesicles and bullae, ranging from pinhead size to 2½ inches (7.62 cm.) in diameter, and situated over the extremities, trunk and face, and also on the mucous membrane of the mouth and nose, and in the vagina. Lesions even existed on the soles of the feet. She said that the eruption at first resembled scarlatina, but soon vesicles began to appear and extended over the trunk and extremities, later involving the head, face and mucous surfaces. The disease began in February, 1920, ten months before, and the vesicular and bullous stage was of approximately six months' duration when seen by Dr. Davis. The case was diagnosed as pemphigus vulgaris. The temperature ranged from 100.5 to 103.5 F., and the general condition was septic at the time of the first examination. The blood picture was normal; the blood coagulation time was four minutes. Urinalysis was negative, except for a trace of albumin. The general condition was grave, owing to the sepsis and prostration. There was edema of the legs and feet.

Treatment.—She received 1.5 c.c. of the blood coagulating preparation three times weekly for four months; then twice weekly for three months, and once a week for four months. The iron and arsenic were given on alternate days with the coagulen and with the same frequency. She was discharged from observation and treatment in January, 1922, and at the present writing (May, 1923) has never shown a return of symptoms. Coagulation time at the end of the treatment was two minutes.

Case 2.—Mrs. P., white, aged 37, came to the clinic at the Barnard Hospital on Oct. 31, 1921, with flat, shiny papules on the legs and feet. These were pruritic and of two months' duration. The diagnosis was lichen planus. She went to the country on a visit immediately after the visit to the clinic above noted, and while there she developed an acute bullous eruption of general distribution accompanied by fever and prostration. She returned to the city and entered the City Hospital, from which she was referred to the Barnard Free Skin and Cancer Hospital, on Nov. 14, 1921, with multiple bullae all over the body, legs and arms, in the mouth and on the lips. The temperature was 99 F.; the pulse rate, 85. Prostration was marked. The diagnosis was acute septic pemphigus. Her condition was grave from the first. There were repeated exacerbations accompanied by fever, and she was considered in an almost moribund state from December 5 to 15. Then a marked improvement set in

which continued for two weeks, when an exacerbation occurred which, however, soon receded, and after this (Jan. 10, 1922) the improvement was rapid and continuous. Her pulse and temperature and blood counts on the dates stated, follow: On December 8, the pulse was 120; temperature, 100; on December 19, the pulse was 115; temperature, 98; on December 20 to Jan. 6, 1922, the pulse was 100 to 120; temperature, 97 to 99.5. On January 31, blood examination revealed: white blood cells, 12,300; lymphocytes, 25 per cent.; large mononuclears, 5 per cent.; polymorphonuclears, 75 per cent., and eosinophils (200 cells counted), 2.5 per cent. On January 25 and 30 and February 6, the urine was normal. The pulse went up to 120 on January 15, 19, 21, 24, 25 and February 4. The temperature was highest on January 16, being 101.5 F.; after February 6 it was normal.

Treatment.—From November 14 to December 3, treatment was local only, and consisted of colloidal baths and the use of Lassar's paste. As was noted above, by December 3, the condition had become grave, and a fatal ending was expected. On this date the use of the blood coagulating preparation (1.5 c.c.) was begun, and it was given every second day thereafter by subcutaneous injection. Solution of potassium arsenite (Fowler's solution), 5 drops, and epinephrin chlorid solution 1:1000, 10 drops, were also each given three times daily. The coagulen was kept up on alternate days until Feb. 8, 1922. Then a dose was given on February 15 and 17, when the patient was discharged, clinically cured. Solution of potassium arsenite had been discontinued on January 9, and the epinephrin chlorid solution on February 17. The iron and arsenic was given intravenously on Jan. 10, 16, 23 and 29, 1922. The coagulating preparation was continued twice weekly in the clinic from February 17 to May 1, 1922. The patient remained well, reporting for observation on Sept. 22, 1922, Jan. 4 and March 30, 1923. It will be seen in this case that the final disappearance of symptoms coincided with the use of the iron cacodylate instead of the potassium arsenite solution.

Case 3.—Miss B. was operated on Oct. 19, 1922, for ventral hernia, following an operation in March, 1922, for pus appendix. Convalescence after the last operation was uneventful until Oct. 28, 1922, when burning and itching of the ears, neck, and around the mouth, were noted. The patient was first seen by me on the following day, October 29, when she presented a redness of the face, neck and buttocks and complained of severe itching of those parts. On October 30, bullae had begun to develop on the sites noted. These bullae burst in the act of formation, or, in the earliest lesions, immediately after formation, leaving raw, red, oozing surfaces. They spread during the night of October 30 to the entire back and chest, and the condition on October 31 was markedly worse. The process extended during this day and night, and on November 1, the condition was severe. Large areas on the back, the entire face, the neck and the region over the sternum, the forearms, and the abdomen, were involved. The epidermis would peel off on the slightest traction, leaving a raw, exuding surface. Both eyes were shut by edema and lesions on the lids, and there was a secondary staphylococcic infection of them. Prostration was extreme. The odor began to be foul. The patient was restless. The temperature was 100 to 101.5 F.; the pulse rate, 120 to 150. A fatal ending seemed imminent. On November 2, to our great relief, the condition, except on the face and neck, seemed slightly better, and the sloughing of areas on the back, that seemed likely the day before, was definitely postponed, and never afterwards threatened.

From this time on, the improvement was steady and continuous; the raw surfaces healed rapidly, and the skin was normal by November 20. The general condition improved along with the skin, and the patient has now been free from lesions for six months.

The case was diagnosed as pemphigus foliaceus—cause unknown; as far as we know, not connected with the previous operation. Internal examination was negative, except for the signs of exhaustion and some sepsis from cutaneous absorption. The urine was normal except for a trace of albumin and a few pus cells (specimen taken on December 5). The prognosis in such cases is almost uniformly fatal.

Treatment.—Iron and arsenic medication, 1 grain, was begun intravenously on October 31, and a subcutaneous dose of the blood coagulating preparation, 1.5 c.c., was given on the same day. This was repeated on November 2. On November 4, the dose of iron and arsenic was reduced to ¾ grain (0.04 gm.), the coagulen remaining the same. This was repeated on November 6 and on November 8; the iron and arsenic was reduced to ¼ grain (0.01 gm.), and on November 11, ½ grain (0.03 gm.) was given, the dose of coagulen being the same full dose as at first given on each of these dates. By November 13, the skin lesions were well, except for some desquamation of the hands, and all skin areas were well, as above noted, by November 20.

Case 4.—A white girl, aged 7, was admitted to the hospital on June 3, 1922. At that time the patient was covered with typical pemphigus vulgaris lesions involving the body, face, legs, thighs, arms and forearms. This case was of three and one-half months' duration. In the previous February, she had been vaccinated. Her arm was sore, and the lesions began to appear before the vaccination wound had healed—a much earlier appearance than usual in such cases. They appeared first on the arms and legs, and since the beginning, she has never been free from lesions. They appeared in successive outbreaks, and usually an exacerbation was preceded by a fever lasting one or two days. On entrance the urine was negative except for a slight increase in indican. The blood clotting time was one and one-half minutes. The case was diagnosed as post vaccinal pemphigus.

Blood examinations revealed June 3, 1922: white blood cells, 10,000; hemoglobin, 70 per cent.; lymphocytes, 18.7 per cent.; large mononuclears, 10.5 per cent.; polymorphonuclears, 60 per cent.; eosinophils, 9 per cent., and basophils, 1.4 per cent. A second blood count was made on Nov. 15, 1922, during a fever and a somewhat pustular exacerbation. The blood count was as follows: red blood cells, 4,968,000; hemoglobin, 75 per cent.; white blood cells, 27,000; polymorphonuclears, 63 per cent.; lymphocytes, 23 per cent.; large lymphocytes, 5 per cent., and eosinophils, 9 per cent. The blood clotting time on Dec. 15, 1922, was five minutes. Examination on Jan. 9, 1923, revealed: white blood cells, 12,600; hemoglobin, 80 per cent.; lymphocytes, 18.9 per cent.; large lymphocytes, 7.5 per cent.; eosinophils, 12.8 per cent., and polymorphonuclears, 60.6 per cent. The blood clotting time was three and one-half minutes. On Feb. 12, 1923, the blood clotting time was three and three-fourths minutes (end of period of freedom); on March 14, the blood clotting time was 3 and one half minutes (end of coagulen injections; on April 17, almost free); on March 29, the blood clotting time was four minutes (as the lesions were drying); on April 29, the blood clotting time was 4¾ minutes (coagulen injections begun two and one-half weeks before; almost well).

Treatment.—At first she was given solution of potassium arsenite internally and xeroform—6 per cent. in Lassar's paste externally, and given only a vegetable diet. This was kept up for three weeks. However, simultaneously, beginning on June 8, a blood coagulating preparation was given every second day. The dose was the full adult dose. The coagulating preparation was discontinued from July 17 to August 1, to determine the effect of iron and arsenic alone. Then it was given every second day from August 1 to September 12, then stopped until October 7, when it was recommended and given every second or third day until November 11, when the local supply temporarily gave out. It was begun again on November 28. The iron and arsenic was begun on June 27 and given every second to fifth day until October 4. In this period, as noted above, the coagulen was stopped, from July 17 to August 1, but was recommenced on the later date as the iron and arsenic alone did not seem to help. On October 5, and for four weeks thereafter, we were unable to get the iron and arsenic. In October, for ten days after discontinuance of the iron and arsenic, there was marked improvement; the condition remained stationary for ten days, and then slowly grew worse for ten days. This medication was begun again on November 8 and continued until December 9, and after that coagulen alone was given every second day until March 17, 1923. Local treatment was soothing except that on September 23, a modified Whitfield's ointment was used on the forearms and hands, and after October 15 this was used on one forearm and hand and a mild tar salve on the other. Since the end of October, the eruption had been confined to the dorsa of the hands and a few lesions at times on the upper lip. The general condition of the patient had been fair, with the exception of fever before some of the outbreaks up to October 15. All lesions cleared up, and the patient was symptomatically well from January 25 to February 8, when new lesions began to appear, first at the base of the thumbs, then on the upper lip, wrist and ankles. All these were slight and were gone by March 3, except on the hands and ankles. On March 17, owing to inability to get into the vein, 3 drops of potassium arsenite solution, three times a day, was begun, as the arsenic medication, and the coagulating preparation was stopped. A mild exacerbation occurred on the hands on March 18 and was involuting by April 1. Another slight recurrence began on April 8, and the solution of potassium arsenite was stopped on April 10 and coagulen recommenced. The solution of potassium arsenite seemed to produce in this case only a temporary improvement and not to hold the disease in check as well as the coagulen alone. On April 17, there was an exacerbation on the hands and face, lasting one week. Since this time the patient has been entirely free of lesions except on the wrists and base of thumbs. The general condition is excellent. At this writing (May 22) even these are disappearing, and only a few lesions on the ankles remain.

Case 5.—J. S., a man, aged 44, came to Dr. Joseph Grindon on Jan. 27, 1923. He had always been in good health until two months previously, when he noticed a slight soreness at the maxillary articulation on the right side. Then a "sore," as he called it, developed in the upper gingival sulcus opposite the third right molar. This was followed by a bulla over the sternum, which he considered a cigaret burn. His teeth were in bad condition, and in spite of repeated directions, were never attended to. On coming to the physician's office, he showed a raw surface, 2½ inches (6.35 cm.) in diameter, over the sternum, and a few smaller bullae scattered over the trunk, and in the axillae and groins. The condition was not severe for the first month, but began to grow markedly

worse, the patient stated, in the second month, that is, one month before Dr. Grindon saw him. The epiglottis, velum and larynx were attacked. In the first week of the third month, a severe dysphagia with choking spells occurred. He was at once placed, by Dr. Grindon, on the treatment outlined in this paper, but he gradually grew worse through five and a half weeks. He then passed under the care of Dr. W. D. Davis after an interval of three days, who confirmed the foregoing findings and reported the patient as being extremely anemic and emaciated, with vesicles and bullae, superficial in character, that ranged from the size of a match head to slightly larger than a silver dollar. There were lesions in the mouth involving the tongue, the inner surfaces of the cheeks and the pharynx. They were generally distributed over the body, with no tendency toward grouping. Some of the ruptured lesions were crusted and exuded pus, and the patient ran a temperature ranging from 100.5 to 103 F. He was placed in a private hospital and given iron and arsenic injections every other day and the coagulating preparation was injected on the alternative days, 5 c.c. of iron and arsenic and 1.5 c.c. of the coagulating preparation being given at each injection. The patient received in all six injections of iron and arsenic and six injections of coagulen from Dr. Davis. The urine on admission to the hospital showed some albumin with an occasional granular cast. He gradually grew worse, and died on March 27, 1923, from a general sepsis. The diagnosis was acute septic pemphigus. This has been our only fatal case to date.

Case 6.—B. McI., a boy, aged 10, came to the clinic on Feb. 6, 1923, and entered the hospital on March 3, 1923. This patient had been vaccinated in September, 1922, and the trouble appeared first in December, 1922 (about the usual interval in such cases), as a pustule on the dorsum of the right hand. Then lesions developed on the face, the nape of the neck and right ear. One week before coming to the clinic, he had a severe erythematobullous eruption on the extensor surfaces of both forearms and both soles, and especially on the legs. Later lesions appeared on the occiput, on the anterior and inner aspects of the arms, the back, chest and abdomen, all sparingly. Physical examination was negative. The site of vaccination showed a slightly raised reddish smooth scar, surrounded by a narrow atrophic scar zone. The diagnosis at first was impetigo contagiosa, which was later changed to postvaccinal pemphigus. The urine was normal. The blood clotting time was four and three-fourths minutes on February 20; three minutes on March 14 and March 29; and four and one-half minutes on April 27. The blood platelets on March 11 were 550,000 and the differential leukocyte count (on March 7) was: small lymphocytes, 11 per cent.; polymorphonuclears, 83 per cent., and eosinophils, 6 per cent. On admission the pulse was 108; the temperature, 100 F. The temperature remained around 100 F. all during March, except that on March 15 it reached 100.5 and on March 18, 104, with a corresponding increase in the pulse rate. The pulse rate ranged from 95 to 120 until April 3, when both temperature and pulse became and have since remained normal. The patient was put on coagulen medication only on February 17, injections being triweekly at the clinic, and the phenomenon of development of bullae at the site of injection was observed for the first two weeks. On March 18, the severe febrile disturbance, above noted, began, and this was followed by pain in the extremities and itching five days later. On March 31, he had a severe general urticaria lasting four days. By this time the older pemphigus areas were better, but some new lesions appeared. There was not much change on the whole. On May 2, the coagulat-

ing preparation was stopped, and the iron cacodylate solution, 2.5 c.c. at first injection, twice weekly, was begun. This was increased to 5 c.c. (1 grain) at the next injection, but later, 2.5 to 4 c.c. were given. The patient was put on Lassar's paste locally until May 14, when equal parts of mild tar and cold cream was substituted. At present the condition is markedly improving. Lesions are present sparingly on the head, but the lower third of the legs and feet are covered with crusted vesicular lesions, reddish and puritic. The diagnosis was postvaccinal pemphigus. The condition is at present satisfactory.

Case 7.—G. R., a man, aged 48, was admitted to the hospital on Sept. 11, 1922. The duration of the disease was then six months. He had never been entirely free from it at any time since it began. The first symptoms noted were itching on the back and the appearance of red macules. There were no constitutional symptoms at the beginning. In a short while, blebs began to appear on the macules. These ruptured quickly, leaving a red moist base. Such lesions appeared all over the body, legs and arms, within a short time. At this period, the patient was under the care of two competent dermatologists who made a diagnosis of pemphigus foliaceus. The condition improved intermittently under solution of potassium arsenite, but was usually severe up to the time he entered the Barnard Free Skin and Cancer Hospital. Then the condition presented was an erythematobullous eruption of general distribution on the arms, legs, thighs, face and body. Many of the bullae had dried into crusts. New bullae ruptured soon after forming, showing a moist, red base with a halo of erythema around it. Some of these lesions coalesced and formed gyrate areas. The odor was foul. There were no subjective symptoms. The temperature was normal. The pulse rate was from 90 to 110. The urine was negative except for a few cylindroids. There was no increase in indican. The Wassermann test was negative. Blood examinations on the various dates are annexed. Blood examination (205 cells counted) revealed: Sept. 11, 1922: red blood cells, 4,064,000; white blood cells, 9,600. The differential count was: lymphocytes, 19.5 per cent.; large mononuclears, 4.8 per cent.; polymorphonuclears, 73.1 per cent., and eosinophils, 2.8 per cent. Sept. 15, 1922: red blood cells, 4,980,000; white blood cells, 11,600 (200 cells counted). The differential count was: lymphocytes, 15.5 per cent.; large mononuclears, 5 per cent.; polymorphonuclears, 76 per cent.; eosinophils, 3.5 per cent., and hemoglobin, 80 per cent. (Talquist). That is, there is no change in the blood picture between the dates noted. The blood coagulation time on December 15 was four minutes; on January 9, three minutes. On Jan. 9, 1923, the blood count was: white blood cells, 7,600; lymphocytes, 20.8 per cent.; large lymphocytes, 11.9 per cent.; polymorphonuclears, 65 per cent., and eosinophils, 1.1 per cent.

Treatment.—Locally, Lassar's paste was used for three days and starch and soda baths were given. Xeroform, 6 per cent., in white petrolatum, was used for thirty-five days, and Lassar's paste was discontinued. Then the Lassar's paste was recommenced and has been used sparingly or alternated with a mild tar salve ever since. No effect was expected from the local treatment except the prevention of the lesions sticking to the clothes and bedclothes and the prevention of secondary infection. Intravenously, the administration of iron and arsenic, 1 grain in 5 c.c. solution, was begun on September 13, and doses were given on September 18, 25, 27 and 30 and on October 1 and 3. There was some improvement after the first three or four doses. Then the condition remained the same. After stopping the treatment on

October 3, owing to inability to obtain the remedy, there was marked improvement, which reached its height in ten or twelve days. The eruption then remained stationary for ten days, and then slowly grew worse until the injections were again begun on November 8. Succeeding injections were given on November 10, 13, 16, 20, 23, 25 and 28, by which time a distinct improvement was noted. The patient first received the coagulating preparation on November 28, and both it and the iron and arsenic have been given since as follows: The coagulating preparation was given on December 4, 9, 11 and 15; then every second day until December 26, when the drug was not obtainable until January 7, from which period to February 18, it was given every second day. Then it was stopped. The patient was at that time nearly well, having a few old involuting lesions on the chest and back only. Iron and arsenic were given every second to third day, from November 20 to December 20. Then on December 27, and every second or third day, except the three weeks before noted, to the present time, May 22, 1923. On Jan. 24, 1923, the patient had a slight exacerbation. He was kept on iron and arsenic medication until February 17, when the coagulating preparation only was given for three weeks, every second day, and together with the iron and arsenic for one week more. Then the iron and arsenic medication only was recommenced and continued to the present time. The patient improved rapidly and has had no new lesions for two months, that is, since April 1. Only a few red papular areas are left on the chest, and he would have been discharged as clinically cured some time since but for the fact that on returning to his home he must of necessity pass out of medical observation and control.

GENERAL OBSERVATIONS

This treatment was first suggested by one of us (W. D. D.) and tried out in Case 1. In this case, as well as in Cases 2 and 3, there was complete recovery, which has lasted to the present time. All these cases were unusually severe, and in all of them a fatal outcome was expected and seemed inevitable. In Cases 2 and 3 the treatment was commenced soon after the disease had appeared, and each of these cases yielded promptly, that is, in from three to six weeks. The patient in Case 1 recovered after eleven months. It will be seen that we have had four clinical recoveries, one patient is almost well, one is improving, and there was only one death. Of the two patients with chronic cases each of three to five months' duration before entering the hospital and beginning the treatment, one is now clinically well and one almost well, and their general condition is excellent. The relative value of the remedies, whether they are best used conjointly or alternately, and especially whether the treatment should be continuous or interrupted, are still subjudice, the number of such cases available even in large clinics and hospitals being so few that much time must elapse before these questions are definitely and satisfactorily answered.

The Rationale of the Treatment.—The coagulating preparation is given to increase the coagulability of the blood and to maintain it as high as possible. The arsenic was tried because it has been known

for a long time empirically that this drug benefits bullous eruptions and is the one that has given the best results, though poor enough in cases of pemphigus. The iron in combination with the arsenic was used for its tonic properties. The two remedies, arsenic and iron, were used intravenously because of the greater therapeutic effect by this method.

Our present opinion is that the remedies can be used either together or alternately but that there should be periods of rest possibly from each, certainly from the iron and arsenic, for instance, one month in every three or four. Of the two remedies, the coagulating preparation seems the more important, as while remissions occur when either or both remedies are being used, they seemed to be less severe and prolonged when the coagulating preparation formed a part of the treatment, although the iron cacodylate is a most valuable adjunct and patients do better usually when both are used, though not necessarily together.

DISCUSSION

Dr. Udo J. Wile, Ann Arbor: I have awaited this paper with a great deal of interest, largely because of the unfortunate experience we have had here with a large number of cases of pemphigus. We have had thirteen fatal cases of pemphigus, all of the patients being shifted into the University Hospital to die since I came here. The most distressing feature to me is the utter inability to do anything for these patients. I believe that the results obtained by Dr. Davis are most extraordinarily hopeful. To think that in four cases of true pemphigus and one of presumptive infectious pemphigus he has been able to discharge the patients from the hospital throws a much more hopeful light on the disease than one would dare to except.

I am interested in the use of the coagulen to increase the coagulation time as I have not been aware that the coagulation time of the blood has been materially lessened in the cases of pemphigus. I have made blood tests in all the cases, and it is interesting that in our group of cases we found nothing which would have led us to use either calcium salts or jelly or any of the other coagulens to increase the coagulation time. I would be interested to learn from Dr. Davis whether in his cases there was a marked decrease in the coagulability of the blood during the acute stage of the disease.

Dr. Oliver S. Ormsby, Chicago: Dr. Lieberthal and I have seen several such cases, and it is our belief that pemphigus is always fatal. We all have a few cases in which the patients are alive after a considerable time, and I have one of the foliaceous type in which the patient is still alive after six years.

One of Dr. Davis' cases resembles the one presented by us in January at the Annual Meeting of the Chicago Dermatological Society. This patient's condition had been cleared up with transfusions of blood. In November, 1922, he was in a hopeless condition. Large areas of the cutaneous surface were completely denuded, and a continuous bath was being empoyed. Intravenous injections of quinin and arsenic and other methods had been employed without effect. As a last resort, transfusions were used. Six were given. The first

from a blood relative, the others from other sources. A marked reaction followed the first treatment. Reactions decreased as treatment progressed. The injections were repeated at weekly intervals. When shown in January the skin was nearly normal, and the general condition of the patient was correspondingly improved. From January until recently the patient has taken arsenic in the form of the Asiatic pill and remains in good condition. Some pigmentation is present.

This was the first patient I ever saw with severe pemphigus and apparently on the road to death that responded to any kind of treatment.

Dr. Jay Frank Schamberg, Philadelphia: It has been my experience to have about half a score of cases of pemphigus in the last few years and all have passed to the "great beyond." In the last case we tried transfusion from carefully selected donors. Two or three transfusions were given, but not with the favorable results just mentioned by Dr. Ormsby. They seemed to have no effect on the disease or on the lethal outcome. Should other members of the Association be as fortunate as Dr. Davis with the method he has suggested, a great advance will have been made.

Dr. David Lieberthal, Chicago: I have seen about forty-eight cases, of which some have been seen by other Chicago colleagues also. I will say that out of those only one patient has survived. An old lady, who was seen also by Dr. Ormsby, is alive and well after four years. She was treated with large doses of arsenic in the form of the Asiatic pill. I feel doubtful as to whether the diagnosis in this case was absolutely correct. I have seen the case referred to by Dr. Ormsby, and the result is certainly astonishing.

I feel certain that the method employed so successfully by Dr. Davis in the treatment of pemphigus will be followed by others.

Dr. Martin F. Engman, St. Louis: Any one who had had a long experience in dermatology would naturally be careful in drawing conclusions regarding any remedy used in pemphigus. I have naturally been skeptical in relation to the treatment of many chronic skin diseases with new remedies, for in many of them, especially in pemphigus. there are remissions and some curious coincidences occur; but I have watched the remedy suggested by Dr. Davis, and it seems rather promising. They have obtained a rather unique result in four cases. We know that the cases he cites are usually fatal in a short time. I have seen his results and the patients have improved, and one may look to the remedy in this number of cases. Some curious things happen in pemphigus, however. I remember one old lady in the Washington University Hospital whom I thought would die, and she wanted to go home. She was in a most pitiful condition, and I told her daughter she could take her home. After she reached home some of her neighbors insisted on calling in a "faith doctor" who "laid on hands," and in the course of a few days after his efforts the patient became much better and remained well for some months, the eruption entirely disappearing. With such observations, of course, where just a change back to her environment excited a disappearance of the eruption, we must be careful about giving credit to therapeutic measures; but I think we are justified in giving the measures mentioned by Dr. Davis a further trial. With two patients apparently cured and two improved when we expected a fatal issue, I think we are justified in continuing the use of these measures in our therapy.

Dr. Robert H. Davis, St. Louis: In regard to Dr. Wile's question, we have worked on that a good deal. Some of the patients had a lowered

coagulatibility, but some did not. I would say that four out of the seven did not, but the administration of the coagulen seemed to lessen the bullous formation. Whether the blood platelets are deficient in cephalin or there is an excess of antithrombin in the blood I do not know, but the giving of the iron and arsenic stimulating the blood forming organs, and the administration of the coagulen to keep the coagulability as high as possible, seemed to us to enable the patient to throw off whatever toxemia was causing the disease. That is as near as we have been able to come to an explanation. If we could keep the blood forming condition at top peak, the disease would be eliminated.

XXXIII.—THE RELATIONSHIP BETWEEN SERUM CHOLESTERIN AND THE WASSERMANN REACTION *

RICHARD S. WEISS, M.D.
AND
ARTHUR L. ESSERMANN, B.S., M.D.
ST. LOUIS

The increasing sensitivity of the Wassermann reaction has caused in recent years much speculation and research in the rôle played by cholesterin. Henes [1] has raised the question: Are not the Wassermann results affected by the fluctuation of the cholesterin in the serum? From the results of his work he seems to favor that conclusion.

It occurred to us that if cholesterin in the serum played a part in the reaction, this fact could be brought out by doing serial Wassermann tests and parallel cholesterin determinations on many patients. Then, on tabulating the results, any correlation between the variations in the cholesterin content and the degree of fixation in the Wassermann test could be observed.

This was accordingly attempted on ninety-one patients, thirty-three nonsyphilitic patients and fifty-eight syphilitic patients. It was impossible to make serial determinations on all of the patients, but it will be observed that two or more determinations were made on sixteen nonsyphilitic patients and on thirty-six syphilitic patients.

THE WASSERMANN TEST

At the time this work was carried on, the Wassermann test was being carried out with both icebox and water-bath incubation. Where the test was negative by the icebox method, it was not carried out by the water-bath method. The results are reported both for the alcoholic antigen and the cholesterin antigen.

THE CHOLESTERIN DETERMINATION

Cholesterin was determined in the blood serum only. The method used was that described by Bloor.[2] The values obtained by this method are considerably higher than those obtained by Bloor's second method.

---

* Studies, reports and observations from the dermatological departments of the Barnard Free Skin and Cancer Hospital and the School of Medicine, Washington University, St. Louis., Mo., U. S. A., service of Drs. M. F. Engman and W. H. Mook.

1. Henes: Am. J. Syphilis **4**:685 (Oct.) 1920.
2. Bloor: J. Biol. Chem. **24**:247, 1916.

There is some controversy as to the absolute accuracy of the cholesterin values as obtained by these two methods; however, what was wanted in this study was relative values in a series, and as the same method was used throughout, the results herewith reported are, we believe, useful. We have included the cases in which only a single Wassermann test and cholesterin determination were made, for the reason that the figures obtained may be of some use to those who are endeavoring to evaluate the methods of cholesterin determinations.

The blood was taken in each case between the hours of 2 and 3 p. m., that is to say, about two hours after the noon meal. No instructions as to diet were given to the patients. From 15 to 20 c.c. of blood were obtained in a large test tube, allowed to clot, and on the serum so obtained both the Wassermann test and the cholesterin determinations were made. A complete tabulation of the results is given in Tables 1 and 2.

TABLE 1.—*Nonsyphilitic Patients*

Case	Number	Clinical History	Date	Wassermann Test				Cholesterin in Blood Serum
				Alcoholic Antigen		Cholesterin Antigen		
				Ice-box	Water-bath	Ice-box	Water-bath	Mg. per 100 C.c.
1. R. A.	A50200	Doubtful history of chancre 6 months ago	7/ 1/21	Neg.	.....	Neg.	.....	205
3. H. A.	A60213	Patient's husband gave history of syphilis	8/ 2/21	.....	Neg.	.....	Neg.	366
			8/ 9/21	.....	Neg.	.....	Neg.	383
			8/12/21	.....	Neg.	.....	Neg.	350
			8/23/21	.....	Neg.	.....	Neg.	310
4. A. A.	A46540	Aortic regurgitation and arteriosclerosis	6/ 2/21	Neg.	.....	Neg.	.....	293
5. A. A.	A55751	Negative	6/17/21	Neg.	Neg.	+	Neg.	359
7. T. B.	A57099	Indefinite history of chancre 12 years ago; no syphilis	6/28/21	Neg.	Neg.	4+	Neg.	495
			7/ 6/21	3+	Neg.	4+	+	655
			7/12/21	4+	Neg.	4+	Neg.	779
			7/19/21	4+	Neg.	4+	Neg.	499
					Neg.	.....	Neg.	476
8. L. B.	A724	Fissure in ano	6/28/21	.....	Neg.	.....	Neg.	304
12. J. B.	A57090	Mitral regurgitation, myocarditis, arteriosclerosis	6/17/21	Neg.	.....	Neg.	.....	333
13. B. B.	A59178	Pruritis, salpingitis, acute pulmonary tuberculosis	8/ 2/21	.....	Neg.	.....	Neg.	383
			8/ 5/21	.....	Neg.	.....	Neg.	480
			8/12/21	.....	Neg.	.....	Neg.	416
			8/16/21	.....	Neg.	.....	Neg.	312
			8/18/21	.....	Neg.	.....	Neg.	326
14. C. B.	A9974	Chronic tonsillitis, pharyngitis, sinus in cheek	8/ 9/21	.....	Neg.	.....	Neg.	383
16. W. B.	A14963	No diagnosis	7/22/21	.....	.....	Neg.	Neg.	372
			7/29/21	Neg	Neg.	.....	.....	366
			8/ 2/21	Neg.	Neg.	.....	.....	346
			8/ 5/21	Neg.	Neg.	.....	.....	383
			8/23/21	Neg.	Neg.	.....	.....	304
17. S. C.	A38359	Scars on shaft of penis	7/ 1/21	Neg.	.....	Neg.	.....	224
18. A. C.	A61469	Arteriosclerosis, chronic interstitial nephritis, aortitis and retinitis	9/ 2/21	.....	Neg.	.....	Neg.	416
20. M. D.	A61130	No diagnosis syphilis	7/22/21	Neg.	.....	Neg.	.....	226
			8/ 2/21	Neg.	.....	.....	Neg.	236

TABLE 1.—*Nonsyphilitic Patients—(Continued)*

Case	Number	Clinical History	Date	Wassermann Test				Cholesterin in Blood Serum Mg. per 100 C.c.
				Alcoholic Antigen		Cholesterin Antigen		
				Ice-box	Water-bath	Ice-box	Water-bath	
22. S. E.	A62432	No diagnosis syphilis	9/ 2/21	Neg.	.....	Neg.	.....	316
23. C. F.	A60747	No diagnosis syphilis	8/26/21	Neg.	.....	Neg.	.....	416
26. R. F.	A60350	History of chancre 5 years ago, not diagnosed	7/15/21	Neg.	Neg.	Neg.	Neg.	499
28. G. F.	A60209	Chronic tonsillitis; no diagnosis of syphilis	7/12/21	Neg.	Neg.	2+	Neg.	542
			7/15/21	Neg.	Neg.	3+	Neg.	509
			7/22/21	Neg.	Neg.	4+	Neg.	469
			8/ 9/21	.....	.....	Neg.	Neg.	453
36. M. J.	A57981	Chronic subinvolution and retroversion of uterus; chronic salpingo-oophoritis	7/24/21	Neg.	.....	Neg.	.....	324
37. J. J.	A59754	Multiple arthritis, chronic	6/28/21	Neg.	.....	Neg.	.....	277
			7/ 6/21	Neg.	.....	Neg.	.....	519
38. J. J.	A61890	Patient's husband had syphilis	8/ 5/21	Neg.	.....	3+	.....	499
			8/12/21	Neg.	.....	4+	.....	609
			8/16/21	Neg.	.....	Neg.	.....	453
			8/23/21	Neg.	.....	3+	.....	383
40. L. J.	A55250	Chronic trigonitis	6/28/21	Neg.	Neg.	4+	Neg.	236
44. M. K.	49650	Sinusitis, chronic constipation	8/ 5/21	.....	Neg.	.....	+	490
50. L. M.	A57823	No diagnosis	8/ 2/21	2+	.....	3+	.....	499
			8/ 5/21	Neg.	.....	4+	.....	490
			8/16/21	Neg.	.....	Neg.	.....	416
			8/23/21	Neg.	.....	Neg.	.....	383
52. M. C.	A17686	Pelvic cellulitis and chronic pulmonary tuberculosis	7/19/21	Neg.	.....	2+	.....	359
			7/29/21	.....	Neg.	.....	Neg.	383
			8/ 2/21	.....	Neg.	.....	Neg.	453
			8/ 5/21	.....	Neg.	.....	2+	429
			8/ 9/21	.....	Neg.	.....	Neg.	499
			8/12/21	.....	Neg.	.....	+	359
53. G. M.	A2948	No history of syphilis	6/24/21	Neg.	.....	Neg.	.....	257
54. J. M.	A61138	Chancre 6 years ago	7/19/21	Neg.	.....	Neg.	.....	429
			7/22/21	Neg.	.....	Neg.	.....	372
56. I. M.	A59548	Chancre 9 years ago	8/ 5/21	Neg.	.....	Neg.	.....	445
			8/12/21	Neg.	.....	Neg.	.....	290
			8/18/21	Neg.	.....	Neg.	.....	330
57. M. M.	A56648	Chronic constipation	6/21/21	Neg.	Neg.	3+	Neg.	249
			7/26/21	Neg.	.....	Neg.	.....	453
			7/29/21	Neg.	.....	Neg.	.....	509
			8/ 2/21	.....	Neg.	.....	Neg.	376
			8/ 5/21	.....	Neg.	.....	Neg.	509
60. J. O.	A60141	Urticaria	7/12/21	Neg.	.....	Neg.	.....	622
66. E. S.	A62424	.....	8/26/21	Neg.	.....	Neg.	.....	355
			8/30/21	Neg.	.....	Neg.	.....	416
82. V. W.	A58841	Vitiligo, no history of syphilis	7/ 8/21	Neg.	Neg.	4+	+	499
85. H. W.	A59092	Rosacea	7/ 1/21	Neg.	.....	Neg.	.....	475
			7/22/21	Neg.	.....	Neg.	.....	499
			8/ 5/21	Neg.	.....	Neg.	.....	546
			8/ 9/21	Neg.	.....	Neg.	.....	453
			8/18/21	Neg.	.....	Neg.	.....	372
91. K. W.	A49302	Chronic pulmonary tuberculosis, no syphilis	8/16/21	Neg.	.....	Neg.	.....	469
			8/18/21	Neg.	.....	Neg.	.....	376

DISCUSSION

A total of seventy-seven cholesterin determinations were made on the nonsyphilitic cases. The average of all of these was 410 mg.

A total of 145 cholesterin determinations were made on the syphilitic cases. The average of all of these was 391 mg.

It will be observed that our values are consistently higher than normal, as established by Bloor and others. Their usefulness in this

TABLE 2.—*Syphilitic Patients*

Case	Number	Clinical History	Date	Wassermann Test				Cholesterin in Blood Serum Mg. per 100 C.c.
				Alcoholic Antigen		Cholesterin Antigen		
				Ice-box	Water-bath	Ice-box	Water-bath	
2. W. A.	A56036	Chancre 6 years ago followed by general eruption	7/ 1/21	3+	Neg.	4+	Neg.	345
			7/22/21	+	Neg.	4+	+	429
			8/12/21	.....	Neg.	.....	Neg.	366
6. F. B.	A61635	Chancre 5 months ago	8/ 2/21	4+	.....	4+	.....	342
9. R. B.	A39781	Chronic interstitial nephritis, no history of syphilis, latent syphilis	6/24/21	+	.....	3+	4+	400
			7/ 1/21	.....	.....	3+	4+	440
			7/22/21	2+	2+	4+	4+	480
10. S. B.	A 9406	Syphilis latent	7/19/21	+	Neg.	4+	Neg.	416
					Neg.	.....	Neg.	396
11. A. B.	A57543	Chronic prostatitis; no history of syphilis; latent syphilis	7/ 6/21	4+	+	4+	3+	333
			7/12/21	4+	Neg.	4+	4+	340
				Neg.	.....	Neg.	.....	390
15. W. B.	A60792	History of chancre 6 years ago; latent syphilis	7/22/21	+	Neg.	4+	4+	283
			8/ 5/21	.....	Neg.	.....	Neg.	320
19. B. C.	A50441	Ulcer over right external malleolus; no history of syphilis; late syphilis	6/28/21	Neg.	.....	Neg.	.....	499
			7/ 8/21	Neg.	Neg.	Neg.	+	712
			7/26/21	Neg.	.....	Neg.	.....	469
			8/12/21	.....	Neg.	.....	Neg.	436
21. D. E.	A61198	Chancre with general eruption	7/22/21	4+	4+	4+	4+	480
24. J. F.	A61384	Early generalized syphilis	8/ 2/21	.....	4+	.....	4+	469
			8/12/21	.....	4+	.....	4+	462
25. H. F.	A59411	Chancre 1 year ago; late syphilis	6/28/21	4+	2+	4+	4+	416
27. G. F.	A59186	Chancre 6 years ago followed by general eruption; perforation of nasal septum	6/24/21	4+	4+	4+	4+	320
			7/ 6/21	4+	4+	4+	4+	346
29. P. G.	A59519	*Acute gastritis	7/12/21	4+	+	4+	4+	656
30. I. H.	A60057	Chancre for 1 month, inguinal adenopathy	7/ 1/21	4+	4+	4+	4+	350
			7/ 8/21	4+	4+	4+	4+	429
31. E. H.	A58886	Endometritis; chronic pelvic cellulitis; latent syphilis	7/12/21	4+	Neg.	4+	Neg.	453
			8/26/21	.....	Neg.	.....	Neg.	416
32. J. H.	A40830	Chancre 7 years ago; optic atrophy	6/28/21	4+	Neg.	4+	3+	355
33. J. H.	A58910	Chronic gastritis, latent syphilis	7/19/21	4+	Neg.	4+	4+	429
			7/29/21	.....	Neg.	.....	Neg.	469
			8/ 2/21	.....	Neg.	.....	Neg.	4 9
			8/ 5/21	.....	Neg.	.....	4+	499
			8/ 9/21	.....	Neg.	.....	4+	355
34. P. H.	A62807	History of two miscarriages	8/26/21	Neg.	.....	Neg.	.....	320
			9/ 7/21	3+	.....	4+	.....	277
35. J. H.	A34596	Urticaria, chronic sacro-iliac strain, latent syphilis	8/26/21	+	.....	4+	.....	383
			8/30/21	Neg.	.....	4+	.....	453
			9/ 2/21	3+	.....	4+	.....	429
			9/ 7/21	4+	.....	4+	.....	416
			9/ 9/21	4+	.....	4+	.....	393
39. M. J.	A 8909	Periostitis tibia; chronic trigonitis	7/ 1/21	4+	Neg.	4+	Neg.	359
41. L. K.	A54617	One miscarriage; one infant died 1½ days	7/12/21	4+	Neg.	4+	Neg.	333
			7/19/21	4+	Neg.	4+	Neg.	383
42. N. K.	A53461	Two miscarriages; gumma of brain removed	7/22/21	3+	Neg.	4+	Neg.	383
43. E. K.	A53464	Sinusitis, chronic tonsillitis, glossitis	7/ 6/21	4+	Neg.	4+	+	620
			7/12/21	4+	Neg.	4+	Neg.	542
45. L. K.	A53175	Chancre 5 years ago with eruption	6/24/21	2+	Neg.	4+	4+	337
46. H. K.	A59341	Chancre 9 years ago with eruption; syphilis of central nervous system	7/ 1/21	4+	2+	4+	4+	231

TABLE 2.—*Syphilitic Patients—(Continued)*

Case	Number	Clinical History	Date	Wassermann Test				Cholesterin in Blood Serum
				Alcoholic Antigen		Cholesterin Antigen		
				Ice-box	Water-bath	Ice-box	Water-bath	Mg. per 100 C.c.
47. L. F.	A58175	Chancre 6 months ago	6/17/21	4+	2+	4+	4+	265
48. A. L.	A62349	Chancre 2 years ago	8/ 2/21	Neg.	.....	Neg.	.....	297
			8/ 9/21	Neg.	.....	2+	.....	333
49. I. L.	A61253	Gumma of testicle	7/29/21	Neg.	.....	Neg.	.....	390
51. B. M.	A58280	Salpingitis, oophoritis, chronic cellulitis	8/26/21	+	.....	4+	.....	310
			8/30/21	3+	.....	2+	.....	295
			9/ 9/21	2+	.....	4+	.....	271
55. B. M.	A12557	Latent syphilis	6/17/21	Neg.	.....	Neg.	.....	182
			6/24/21	2+	Neg.	2+	Neg.	190
			7/ 1/21	2+	Neg.	2+	Neg.	220
58. C. N.	A59159	Two miscarriages; cervical adenitis	6/24/21	3+	Neg.	4+	4+	304
59. E. N.	A58024	No history of syphilis; late syphilis	6/24/21	4+	4+	4+	4+	328
61. J. P.	A60336	Chancre 3 years ago with eruption; optic atrophy	7/15/21	4+	Neg.	4+	4+	480
			7/22/21	4+	4+	4+	4+	499
			8/ 2/21	.....	4+	.....	4+	403
			8/ 5/21	.....	Neg.	.....	4+	546
62. A. P.	A55742	Arteriosclerosis, aortitis, cystitis and constipation	6/17/21	4+	Neg.	2+	+	262
			7/26/21	4+	Neg.	4+	2+	376
			8/ 2/21	.....	Neg.	.....	Neg.	346
			8/ 9/21	.....	Neg.	.....	Neg.	350
63. B. P.	A59990	Chancre 2 years ago	7/ 8/21	4+	Neg.	4+	4+	355
			7/29/21	.....	+	.....	4+	337
			8/ 2/21	.....	Neg.	.....	2+	307
64. J. R.	A350	Osteo-arthritis, nerve deafness senile, hydrocele, hematocele, latent syphilis	6/24/21	+	.....	2+	.....	305
			7/15/21	3+	Neg.	4+	Neg.	366
			7/22/21	4+	Neg.	4+	Neg.	376
			7/26/21	4+	Neg.	4+	Neg.	320
			7/29/21	.....	Neg.	.....	Neg.	416
			8/12/21	.....	Neg.	.....	Neg.	529
65. H. R.	A36028	Chancre followed by eruption 20 years ago; optic atrophy	6/23/21	+	Neg.	4+	Neg.	333
			7/ 6/21	4+	Neg.	4+	Neg.	509
			7/12/21	2+	Neg.	4+	Neg.	304
			7/19/21	4+	Neg.	4+	Neg.	324
67. L. S.	A34628	Sacro-iliac arthritis	7/ 1/21	3+	Neg.	4+	Neg.	409
68. H. S.	A60219	Latent syphilis	7/12/21	2+	2+	4+	4+	416
			8/ 2/21	Neg.	.....	Neg.	.....	403
69. I. S.	A58544	Circinate papular lesions on arm	7/ 1/21	Neg.	.....	Neg.	.....	416
			7/ 8/21	Neg.	Neg.	+	2+	622
			7/15/21	Neg.	.....	Neg.	.....	650
			7/22/21	Neg.	Neg.	2+	4+	552
			7/26/21	Neg.	.....	Neg.	.....	509
			8/ 5/21	Neg.	.....	2+	.....	546
70. J. S.	A56021	One miscarriage, latent syphilis	6/24/21	2+	Neg.	4+	Neg.	529
71. C. S.	A30665	Husband had syphilis	6/28/21	4+	Neg.	4+	4+	403
72. T. S.	A59447	Chancre 2 months ago, papular eruption on shoulder and leg	7/ 1/21	4+	+	4+	4+	277
73. M. S.	A59093	No history of infection; on treatment	7/12/21	4+	Neg.	4+	4+	490
			7/15/21	4+	.....	4+	4+	530
			7/29/21	.....	Neg.	.....	Neg.	359
			8/21/21	.....	Neg.	.....	Neg.	376
74. D. V.	A60297	Pain and swelling of forehead and face	8/22/21	3+	Neg.	4+	4+	366
75. V. T.	A59502	No history of syphilis	7/ 5/21	4+	+	4+	4+	324
			7/15/21	4+	4+	4+	4+	350
			7/22/21	4+	+	4+	4+	265
			7/26/21	4+	+	4+	4+	499
			8/ 2/21	.....	Neg.	.....	4+	396
76. J. W.	A61713	Latent syphilis	8/ 2/21	.....	4+	.....	4+	196
			9/ 9/21	.....	+	.....	4+	188
77. E. W.	A61217	Circinate papular eruption on elbow	7/22/21	4+	4+	4+	4+	469
			9/ 2/21	.....	Neg.	.....	4+	333
			9/ 7/21	.....	3+	.....	4+	342
78. M. W.	A59220	Latent syphilis	6/28/21	4+	4+	4+	4+	509

TABLE 2.—*Syphilitic Patients—(Continued)*

Case	Number	Clinical History	Date	Wassermann Test				Cholesterin in Blood Serum Mg. per 100 C.c.
				Alcoholic Antigen		Cholesterin Antigen		
				Ice-box	Water-bath	Ice-box	Water-bath	
79. W. S.	A58885	Chancre 12 years ago	6/24/21	2+	Neg.	4+	4+	283
80. W. W.	A59066	Syphilitic iritis, chancre 1 month ago	7/ 8/21	4+	4+	4+	4+	355
81. M. W.	A53814	Chancre 5 years ago; 3 miscarriages	6/24/21	4+	3+	4+	4+	312
83. A. W.	A60316	Chancre 12 years ago followed by eruption	7/22/21	4+	Neg.	4+	2+	293
			8/ 2/21	.....	Neg.	.....	Neg.	304
			8/ 5/21	.....	Neg.	.....	Neg.	355
			8/12/21	.....	Neg.	.....	Neg.	287
84. A. W.	A57640	Two miscarriages; latent syphilis	6/28/21	Neg.	Neg.	2+	Neg.	293
			7/ 6/21	3+	Neg.	4+	2+	335
			7/12/21	4+	4+	4+	4+	416
			7/19/21	2+	Neg.	4+	Neg.	429
			7/22/21	3+	+	4+	4+	376
			7/29/21	.....	Neg.	.....	Neg.	268
			8/12/21	.....	Neg.	.....	Neg.	416
			8/18/21	.....	Neg.	.....	Neg.	499
86. J. W.	A60681	Chancre 12 years ago; gumma of shoulders	7/29/21	.....	Neg.	.....	Neg.	469
			8/ 9/21	.....	Neg.	.....	Neg.	469
			8/12/21	.....	Neg.	.....	Neg.	453
			8/16/21	.....	Neg.	.....	Neg.	390
			8/23/21	.....	Neg.	.....	Neg.	372
87. E. W.	A62096	Chancre 1 year ago followed by eruption on treatment	9/ 2/21	.....	3+	.....	4+	277
			9/ 7/21	.....	4+	.....	4+	208
88. A. W.	A59652	Two miscarriages	7/15/21	3+	+	4+	3+	372
			7/19/21	4+	Neg.	4+	4+	469
			7/22/21	3+	Neg.	4+	4+	433
			7/26/21	4+	+	4+	4+	509
			8/ 2/21	.....	Neg.	.....	Neg.	403
89. L. R.	A62128	Eruption 12 years ago, 5 miscarriages; on treatment	8/16/21	3+	.....	3+	.....	390
			8/18/21	3+	.....	3+	.....	429
			8/26/21	4+	.....	4+	.....	320
90. C. B.	A62190	Latent syphilis	8/16/21	4+	.....	4+	.....	499
			8/23/21	4+	.....	4+	.....	509
			8/26/21	3+	.....	4+	.....	383
			8/30/21	3+	.....	3+	.....	490

investigation is not impaired, as the results were obtained by an unvarying technic and the readings were all made by the same observer. We are, however, unable at present to explain these high values. It has been suggested that perhaps the cholesterin content of human blood serum is higher two to three hours after a meal. The only work which we have been able to find on this subject is that of Bloor [3] and Knudson,[4] who found that cholesterin in the blood was not increased following the feeding of large amounts of fat. This work was done on dogs. We have not been able to find records of similar work on human blood.

A study of the figures presented in the nonsyphilitic cases shows no correlation between the serum cholesterin and the degree of fixation of the Wassermann reaction. Case 3 gave a totally negative Wassermann reaction at intervals of seven, three and eleven days, with

3. Bloor: J. Biol. Chem. **24**:447, 1916.
4. Knudson: J. Biol. Chem. **32**:337, 1917.

a total variation in the cholesterin content of 73 mg. In Case 7 there was a stronger positive Wassermann reaction with cholesterin at 655 mg. than with cholesterin at 779 mg. Case 13 gave a totally negative Wassermann reaction with a cholesterin variation of 168 mg. A similar result is shown in Cases 16, 54, 56, 85 and 91. Case 28 showed + + Wassermann reaction, cholesterin 542 mg.; + + + Wassermann reaction, cholesterin 509 mg.; + + + + Wassermann reaction, cholesterin 469 mg.; the exact opposite of what we would expect when the degree of fixation is influenced by the cholesterin content. On the other hand, Case 38 showed correlation between the degree of fixation and the cholesterin content. Cases 52 and 57 did not show this correlation.

A study of the figures presented in the syphilitic cases shows no correlation between the serum cholesterin and the degree of fixation of the Wassermann reaction. If one studies Cases 9, 10, 19, 31, 48, 55, 64, 65, 68, 73, 77, 83 and 84, one gets the impression that some correlation exists, and then turning to Cases 11, 15, 33, 34, 35, 43, 51, 61, 62, 69, 87, 89 and 90, it will be seen that entirely opposite results are presented.

These results are in accord with the study of Craig and Williams,[5] who found that the hypercholesterinemia produced by feeding rabbits large amounts of cholesterin does not cause the blood serum of these animals to give a positive Wassermann reaction. They agree also with the recent study of McFarland,[6] who reached the conclusion that the positive Wassermann reaction on the blood serum does not depend on high cholesterin content. They are in agreement also with the work of Thalhimer and Hogan,[7] who believe that hypercholesterinemia does not increase the strength of the Wassermann reaction whether plain or cholesterinized antigens are used.

SUMMARY

A study of serial Wassermann tests with parallel cholesterin determinations on the blood serum is presented.

In some cases, the cholesterin values paralleled roughly the degree of fixation in the Wassermann test, while in others no such correlation could be found.

---

5. Craig and Williams: Am. J. Syphilis **5**:392 (July 21) 1921.

6. McFarland, Albert R.: Studies on Blood Cholesterol in Syphilis, Arch. Dermat. & Syph. **6**:39 (July) 1922.

7. Thalhimer, William, and Hogan, Beatrice M.: The Inability of Serums with a High Cholesterol Content to Increase the Strength of the Wassermann Reaction, Arch. Dermat. & Syph. **7**:482 (April) 1923.

CONCLUSION

The degree of fixation in the Wassermann test seems to be independent of the cholesterin content of the serum.

XXXIV.—LYMPHANGIECTATIC HYPERTROPHY OF THE VULVA OCCURRING IN A NEVUS UNIUS LATERIS*

NORMAN TOBIAS, M.D.
Resident Dermatologist Barnard Free Skin and Cancer Hospital
ST. LOUIS

The association of two congenital anomalies of the skin is of sufficient interest and rarity to warrant the report of a case. Although lymphangiomas and linear nevi, individually, are relatively not uncommon, the association of the two is unique from a pathologic and clinical standpoint.

REPORT OF A CASE

History.—A white girl, aged 15, was admitted to the gynecologic service of Dr. Fred J. Taussig, complaining of a growth on the vulva which had been present from infancy. The family history was negative. She had had the usual diseases of childhood, and a tonsillectomy had been performed at the age of 12. The present condition was first noted at birth as a small growth in the right labial region. It continued to enlarge gradually, and various lotions were applied for its relief. In spite of such local treatment, however, the lesions persisted. At 13 years of age menstruation began, occurring at intervals of from six to eight weeks, painful and rather free. Shortly thereafter there appeared a moderate infectious eczematoid dermatitis of the inner thighs due, doubtless, to the irritating lymph discharge from the vulvar lesion. Beyond a moderate pruritus and burning sensation, the patient experienced no discomfort.

Physical Examination.—The patient was well developed and well nourished. The heart, lungs and abdomen were normal. On the right half of the tongue (Fig. 1) and the vermilion border of the lips (Fig. 2) could be seen a nevus unius lateris of the hyperkeratotic type. The right half of the tongue was smooth but furrowed in places, and it appeared thicker than the left half. The papillary markings were indistinct. On the lips could be seen a rough, scaly condition which was sharply limited at the midline. There was a patch of vitiligo on the skin of the chest in the right infraclavicular region.

Examination of the vulva revealed a condylomatous, hypertrophic mass, involving the right labium minus (Fig. 3). The growth was pinkish with a yellowish cast, fairly soft in consistency, and involved the entire labium minus together with the right half of the prepuce of the clitoris. The lesion was composed of gyrate folds of tissue covered with a thickened edematous skin and numerous tense, transparent vesicles. The right labium majus was enlarged to twice its normal size and pushed over to the right by the mass. The skin of the right perianal and perineal regions was verrucous and covered with a thin yellowish discharge. The entire process was limited to the right half and terminated sharply at the midline. The upper third of the right inner thigh was

---

* From the Gynecological Service of Dr. Fred J. Taussig.

* Studies, reports and observations from the dermatological departments of the Barnard Free Skin and Cancer Hospital and the School of Medicine, Washington University, St. Louis, Mo., U. S. A., service of Drs. M. F. Engman and W. H. Mook.

the site of a verrucous linear nevus which showed inflammatory reaction from irritation by the lymphorrhea of the vulvar growth.

Microscopic Examination.—(Section from right labium minus.) The surface epithelium was thrown into irregular club-shaped folds. In places the stratum corneum was thin; in others, absent. The granular layer was poorly defined. The rete mucosum showed marked acanthosis with long, irregular branched pegs projecting into the corium. In some parts of this layer, intracellular edema was marked, and vacuolization was visible in some of the cells. The basal

Fig. 1.—Nevus unius lateris of the tongue associated with vulvar lesion.

Fig. 2.—Nevus unius lateris of the lip associated with vulvar lesion.

layer was absent. The papillae were greatly elongated and irregular, and in some places only a thin layer of epidermis separated them from the surface. They contained numerous dilated lymph channels with thin endothelial walls. These lymph channels were also present throughout the corium and varied in size and shape from 1 to 5 mm. Most of them had a slitlike appearance. Dilated blood vessels were numerous in the papillary and subpapillary layers. In the latter, there was a moderately dense cellular infiltration consisting of lymphocytes, plasma cells and connective tissue cells. Sebaceous glands, coil glands and hair follicles were absent in the center of the labial mass.

Anal Margin.—There was slight hyperkeratosis and moderate parakeratosis. The mucous layer showed marked acanthosis with deep irregular rete pegs. In this layer the cells were well defined and show evidence of mitosis. The interpapillary projections were very irregular and branching, and the basal cell layer was intact. The histopathology in the corium showed enlarged and

Fig. 3.—Lymphangiectatic hypertrophy of the vulva occurring in a nevus unius lateris.

irregular papillae containing dilated lymph spaces and blood vessels. There was moderate cellular infiltration, more marked in the reticular layer, consisting mostly of lymphocytes and connective tissue cells, with a few plasma and polymorphonuclear cells. The coil glands and sebaceous glands were normal

Laboratory Report.—The urine and blood count were normal. The Wassermann test was negative.

Treatment.—Under ether anesthesia (Aug. 25, 1922) the right labium minus, the inner portion of the right labium majus and the entire clitoris were excised by Dr. Fred J. Taussig. The nevus on the perineal and perianal region was treated with radium in tubes. The operation caused marked relief with improvement of the lymphorrheal discharge and no recurrence of the swelling. The perianal warts were reduced in size by the two treatments, but did not disappear completely. Some dermatitis was still present nine months after operation when the patient was last seen.

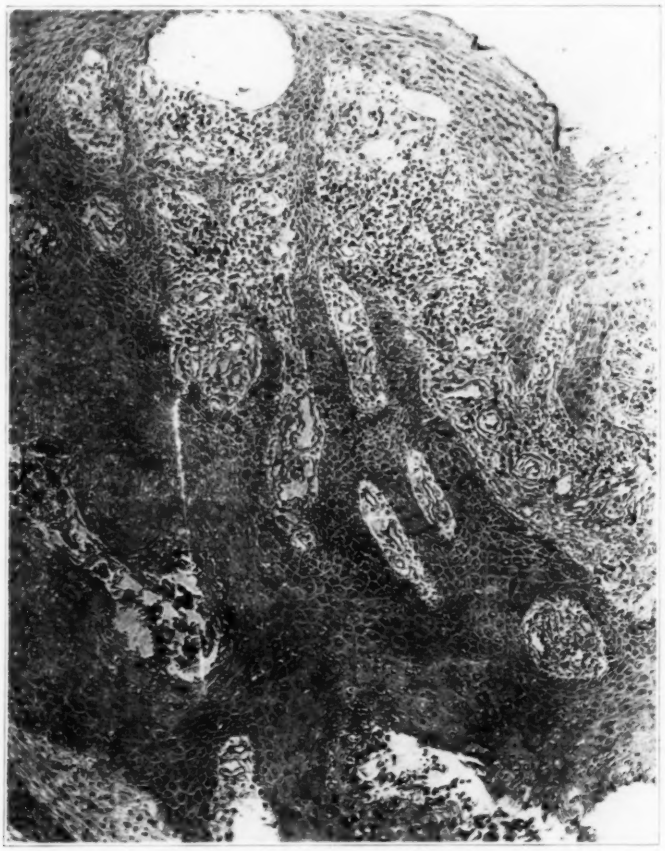


Fig. 4.—Section from labium minus showing dilated lymph spaces.

REVIEW OF THE LITERATURE

The classification of diseases of the lymphatics is still in an unsettled state so that the terminology used by various authors is conflicting. However, the reason for this is that many of the cases are borderline cases and difficult of accurate pathologic diagnosis, some showing both evidence of a new growth of the lymphatics (lymphangioma) and a dilatation of preexisting vessels (lymphangiectasis).

Lymphangioma of the Vulva.—Lymphangioma of the vulva—taken alone—is a rare disease. The following cases have been reported in the literature:

In 1892, Epstein [1] reported a case in a woman, aged 40, in whom the disease began at the age of 24 as "fine, scattered pimples." In her case, the pubic, hypogastric, right and left inguinal and left buttock regions were covered with a pinkish, wartlike growth, interspersed with

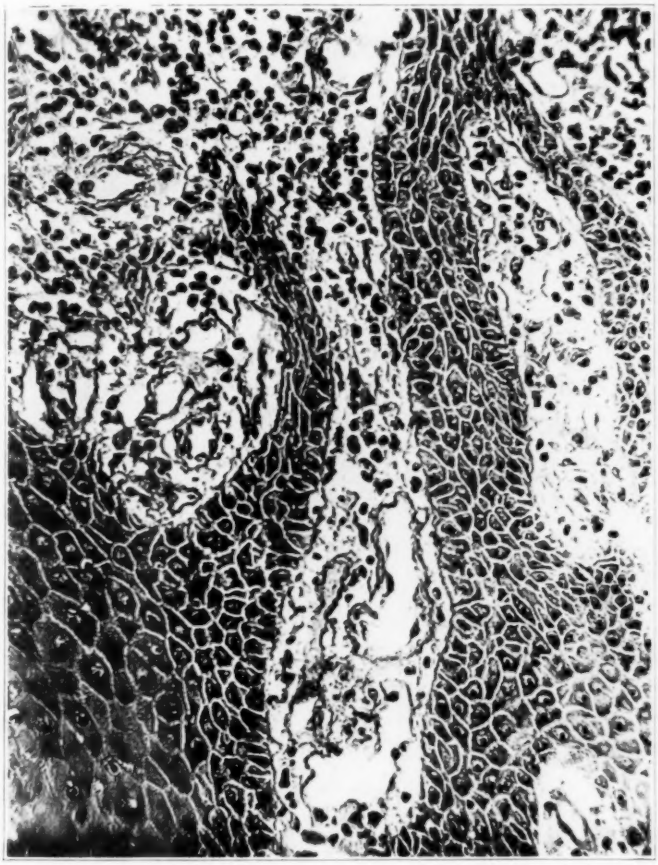


Fig. 5.—High power magnification of an area shown in Figure 4.

isolated and grouped vesicles. The labia majora, which were also involved, were converted into large folds. An interesting feature of Epstein's case is that the patient, who gave a history of syphilis seven years before the onset of the present trouble, showed gradual improvement with inunctions of potassium iodid and mercury.

1. Epstein: A Case of Lymphangioma of the Vulva, J. Cutan. Dis. **10**:213, 1892.

In 1896, Heuss [2] described a case occurring in a girl aged 24, with involvement of the labia majora and anal fold. The labia minora were free. There were a few aberrant typical lymphatic vesicles on the right thigh and right axillary regions. The process was first noted in the right labium majus at the age of 16. Heuss considered the lesions not only a lymphangiectasis, but a real new growth also. The section showed numerous lymph spaces lined with endothelium and proliferation of the elements of the vessel wall.

White,[3] in 1898, reported a case of lymphangiomatous process involving the labia majora of an unmarried woman aged 27, which began following an edema of the legs. The labia were greatly thickened and covered with closely compacted outgrowths of various sizes, dull red, with rugose, verrucous surfaces and distinctly separated down to their base. The labia minora and clitoris were not affected. In view of the unusual location of the disease and the nature of the growth, White's diagnosis was lymphangioma superficiale on the basis of deep-lying lymphangiectatic processes.

In 1905,[4] Lehmann reported a case of diffuse lymphangiectatic involvement of the buttock, labia, perineum and right thigh in a girl aged 22. Excision of the tumor on the right labium was followed by a recurrence after one year.

PATHOLOGIC VARIATIONS IN NEVUS UNIUS LATERIS

Nevus unius lateris (linear nevi, zoniform or segmented nevi, ichthyosis hystrix linearis) is clinically described as a congenital affection of the skin, consisting of lesions arranged in linear bands or streaks, usually unilateral and affecting any part of the skin or orificial mucous membranes. These lesions may be light, dark brown or black. They may have a rough or smooth surface, and may be verrucous, papillomatous, hyperkeratotic or hyperpigmented. Various elements of the skin are sometimes included in the nevic growth, vascular tissue being the most common. Adamson [5] suggests that the term nevus unius lateris be broadened to include the variations, especially certain pigmentary forms, angioma serpiginosum, lymphangiectodes and some of the leiomyomas. Linear nevi may be associated with vascular changes,

2. Heuss: Lymphangioma Circumscription Cysticum, Monatschr. f. Prakt. Dermat. **23**:1, 1896.

3. White, J. C.: Lymphangioma of the Labia Majora Vulvae, J. Cutan. Dis. **16**:67, 1898.

4. Lehmann: Elephantiasis of the Vulva, Zentralbl. f. Gynäk. **29**:750, 1905.

5. Adamson: Some Remarks upon Zoniform or Segmental Naevi, Brit. J. Dermat. **26**:379, 1914.

cases having been reported by Adamson,[6] Oberndorfer[7] and others. The sweat glands have been involved in cases reported by Peterson[8] and Elliot,[9] and the sebaceous glands in cases described by Hallopeau[10] and Jadassohn.[11]

The association of lymphangioma and linear nevus must be a rarity, as few cases could be found in the literature. Robinson,[12] in 1894, presented a case before the New York Dermatological Society in a young girl who had a linear band of red vesicles on the left side of the neck. Although the case appeared to be a hematolymphangioma, some members of the Society considered it to be a nevus unius lateris. Howell,[13] in 1919, reported a case in a child, aged 6, who had a congenital nevus of the lower lip and an associated lymphangioma of the tongue. In 1921, Abramowitz[14] presented before the New York Academy of Medicine a boy, aged 15, who had a large, livid flat patch covered with lymph vesicles, extending from the dorsum of the left foot to the middle of the thigh. The case was diagnosed as a nevohemangiolymphangioma.

COMMENT

The literature on lymphangioma of the vulva, strictly limited to that part, is scant, and many of the cases reported are not true lymphangiomas but acquired lymphangiectatic growths. Epstein's and Heuss's cases were undoubtedly ones of lymphangioma circumscriptum cutis, but they differ from ours in their late onset and more generalized distribution. The history of a preceding edema in White's case suggests that his patient was suffering from a lymphangiectatic process, while Lehmann's case also appears to belong to this type. The growth in our patient was noted at birth and had always been limited to the

---

6. Adamson: Linear Naevus with Combined Verrucous and Vascular Elements. Case Report, Brit. J. Dermat. **22**:263, 1910.

7. Oberndorfer: Naevus Linearis of the Angiomatous and Verrucous Type. Case Report, J. Cutan. Dis. **26**:280, 1908.

8. Peterson: Linear Naevus Associated with Sweat Gland Structures, Arch. f. Dermat. u. Syph. **24**:919, 1892.

9. Elliot: Adeno-Cystoma Intracaniculare Occurring in a Naevus Unius Lateris, J. Cutan. Dis. **11**:168, 1893.

10. Hallopeau: Linear Naevus Associated with Agglomerated Hair Follicles and Sebaceous Glands, Progrès méd., 1891.

11. Jadassohn: Linear Naevus with Sebaceous Gland Involvement, Arch. f. Dermat. u. Syph. **33**:361, 1895.

12. Robinson: Lymphangioma Circumscriptum (Case Report), J. Cutan. Dis. **13**:32, 1895.

13. Howell: Lymphangioma of the Tongue (Case Report), Brit. J. Child. Dis. **16**:213, 1919.

14. Abramowitz: Nevo-Hemangio-Lymphangioma of the Left Leg, Arch. Dermat. & Syph. **3**:321 (March) 1921.

vulva. Since the tumor was not definitely encapsulated, we have preferred to use the term lymphangiectatic hypertrophy, or lymphangiectasia, rather than lymphangioma. Most of the cases described are of this somewhat diffuse type.

As regards the association of lymphangioma or lymphangiectasia with linear nevi of the vulva, no other such case could be found in the literature. That such a combination may occur in other regions is shown by the case above reported by Robinson and Abramovitz.

SUMMARY

The association of lymphangioma and nevus unius lateris appears to be unique. The vulva appears also to be an infrequent location for lymphangioma. Montgomery [15] has attempted to explain the linear distribution of nevi by the theory that the nevic cells lie in the embryonic sutures and follow the trend of growth of the tissues. Crocker [16] does not believe this theory holds for all cases. Balzer and Alquier, quoted by Stelwagon,[17] conclude that the readiest explanation is on the basis of Voigt's lines. It may be stated that the entire subject is still unsettled.

Our case is reported as an example of a rare combination of two pathologic entities. We are unable to offer any plausible explanation for this unique association.

---

15. Montgomery: The Cause of Streaks in Naevus Linearis, J. Cutan. Dis. **19**:455, 1901.

16. Crocker: Diseases of the Skin, Philadelphia, P. Blakiston's Son Company, 1905, p. 975.

17. Stelwagon: Diseases of the Skin, Philadelphia, W. B. Saunders Company, Ed. 9, 1921, p. 540.

XXXV.—MONILETHRIX

REPORT OF FIVE CASES OF THE FAMILIAL AND HEREDITARY TYPE *

NORMAN TOBIAS, M.D.
Resident Dermatologist, Barnard Free Skin and Cancer Hospital
ST. LOUIS

Monilethrix, first described by W. O. Smith [1] of Dublin in 1879 and named by Crocker [2] in 1903, is a disease of sufficient rarity and interest to warrant the report of further cases of this affection. Up to the present, a total of 133 cases have been recorded in the literature.

In America the disease was first described by Bulkley [3] in 1881 in a boy of 6, in whom the disease began in infancy and was associated with a generalized lichen pilaris. Since then cases have been reported in this country by Morrow,[4] Gilchrist,[5] Clark,[6] Ruggles,[7] Goldenberg,[8] McKee and Rosen,[9] Harris,[10] Wise [11] and Scheer.[12] Our report is unique in that no American author, to our knowledge, has recorded as many of the familial cases as we have observed.

CLINICAL ASPECTS

The disease is characterized by the following features, all of which are usually present: (1) congenital nature; (2 predilection for the scalp; (3) beading of the hairs; (4) gradual alopecia and (5) associated keratosis pilaris.

---

* Studies, reports and observations from the dermatological departments of the Barnard Free Skin and Cancer Hospital and the School of Medicine, Washington University St. Louis, Mo., U. S. A., service of Drs. M. F. Engman and W. H. Mook.

1. Smith, W. G.: On a Rare Nodose Condition of the Hair, Brit. M. J. **2**:291, 1879.
2. Crocker: Diseases of the Skin, Philadelphia, P. Blakiston's Sons, 1905, p. 1191.
3. Bulkley: Transactions of the International Medical Congress, London **3**:190, 1881.
4. Morrow: A Case for Diagnosis, J. Cutan. Dis. **17**:41, 1899.
5. Gilchrist: A Case of Monilethrix with an Unusual Distribution, J. Cutan. Dis. **16**:157, 1898.
6. Clark: A Case of Monilethrix, J. Cutan. Dis. **33**:486, 1915.
7. Ruggles: Monilethrix, J. Cutan. Dis. **18**:500, 1900.
8. Goldenberg: Keratosis Follicularis Capitis, J. Cutan. Dis. **29**:553, 1911.
9. McKee and Rosen: Monilethrix, J. Cutan. Dis. **34**:444 and 506, 1916.
10. Harris: Acquired Monilethrix, J. Cutan. Dis. **37**:430, 1919.
11. Wise: Monilethrix in a Mother and Two Children, J. Cutan. Dis **37**:471, 1919.
12. Scheer: Monilethrix, Arch. Dermat. & Syph. **7**:275 (Feb.) 1923.

The onset of the disease is gradual, as one would expect from the nature of the malady. In most instances, the affection is first noticed a few weeks to a few months after birth, although a few cases beginning in adult life have been recorded. The progress of events in the average case may be summed up thus: The normal hair which previously covered the scalp becomes dry, brittle and lusterless and the hairs begin to break off either spontaneously or in the act of brushing. Sooner or later, an alopecia of the affected parts gradually develops adn the scalp

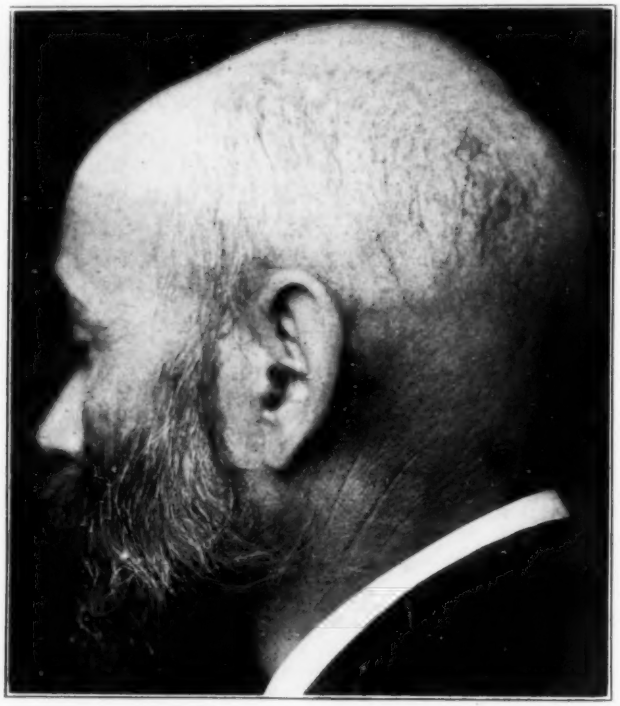


Fig. 1.—S. K., aged 53, with alopecia of the frontal and occipital regions with moderate seborrhea and mild keratosis pilaris. A few beaded hairs are present.

becomes covered with short, dry, twisted or curved hairs which, on close examination, appear to be beaded or intermittently constricted. The beads (nodes) which represent the normal portion of the hair shaft are separated from one another at irregular intervals by depigmented constrictions (internodes), the latter being the pathologic, aplastic or atrophic feature of the disease.

Associated with the disease is a keratosis pilaris which may occur before or after the onset. This may be mild or quite marked. Although

the scalp is the usual site for monilethrix, the hairs of the eyebrows, lashes, axillae, trunk, pubes or extremities may in rare instances be affected partially or completely.

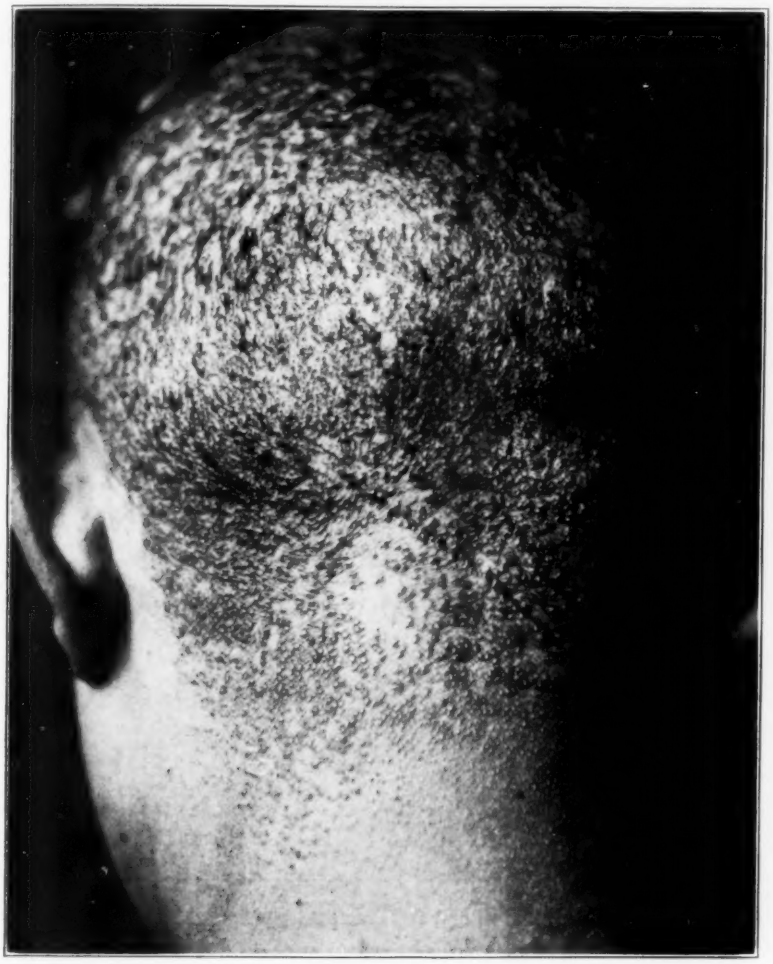


Fig. 2.—B. K., aged 22, with diffuse alopecia with marked keratosis pilaris and beading of the hairs. In this case the axillary hairs were also affected.

The disease has been more frequently observed in Europe, especially in France and Germany. Castellani and Chalmers [13] have seen cases

13. Castellani and Chalmers: Manual of Tropical Medicine, New York, William Wood and Company, 1919, p. 2282.

among the Singalese and Tamils of Ceylon, while Répinay [14] reported recently four cases from Morocco. Most of the cases reported by American observers have been in European immigrants or in their children. In our series, all but one (fifth generation) were born in Russia.

Treatment is ineffective. McKee,[15] Low [16] and others obtained no improvement with roentgen-ray treatment, the returning hair being just as badly affected as before treatment.

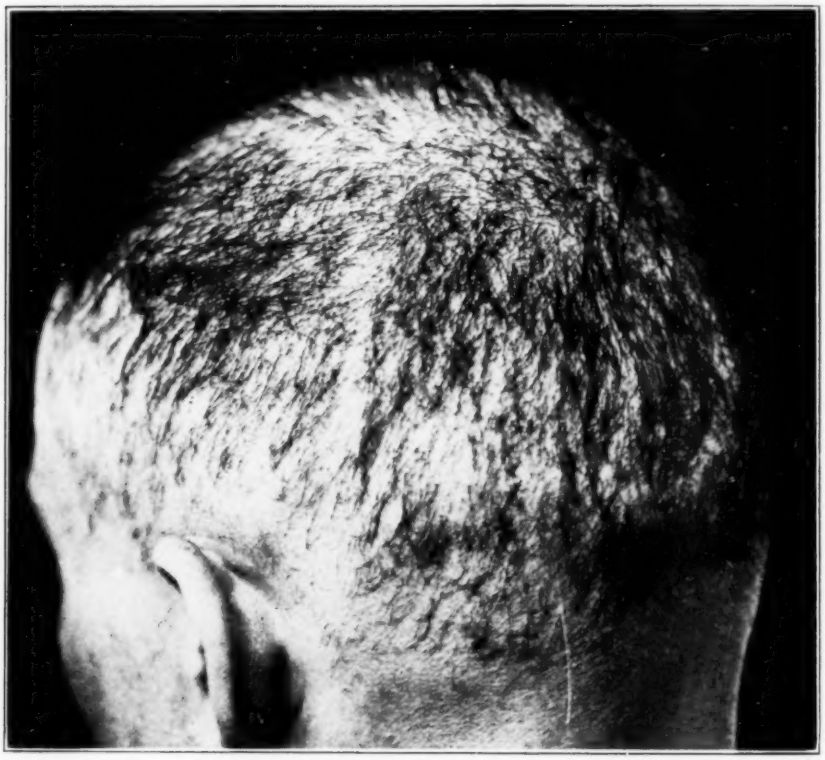


Fig. 3.—D. K., aged 24, with moderate alopecia, beaded hairs and a keratosis pilaris limited to the back of the neck.

REPORT OF CASES

We were fortunate in observing five cases of monilethrix in a family in which the disease was found to be hereditary and affecting five

14. Répinay: Four Cases of Hereditary Monilethrix in Moroccans, Bull. Soc. franç. de dermat. et syph. **4**:152, 1921.

15. McKee: X-Ray and Radium in the Treatment of Diseases of the Skin, Philadelphia, Lea and Febiger, 1923, p. 495.

16. Low: The Pathology and Etiology of Monilethrix, J. Path. & Bacteriol. **14**:230, 1909-1910.

generations. The paternal great grandfather and paternal grandfather were said to be affected, although they had been reticent in discussing the disease with their children. Our report includes the father, three of his children and a grandson.

Case 1.—S. K., a man, aged 53, born in Russia, the father of B. K., D. K., R. K., and the grandfather of L. K., was well developed and well nourished.

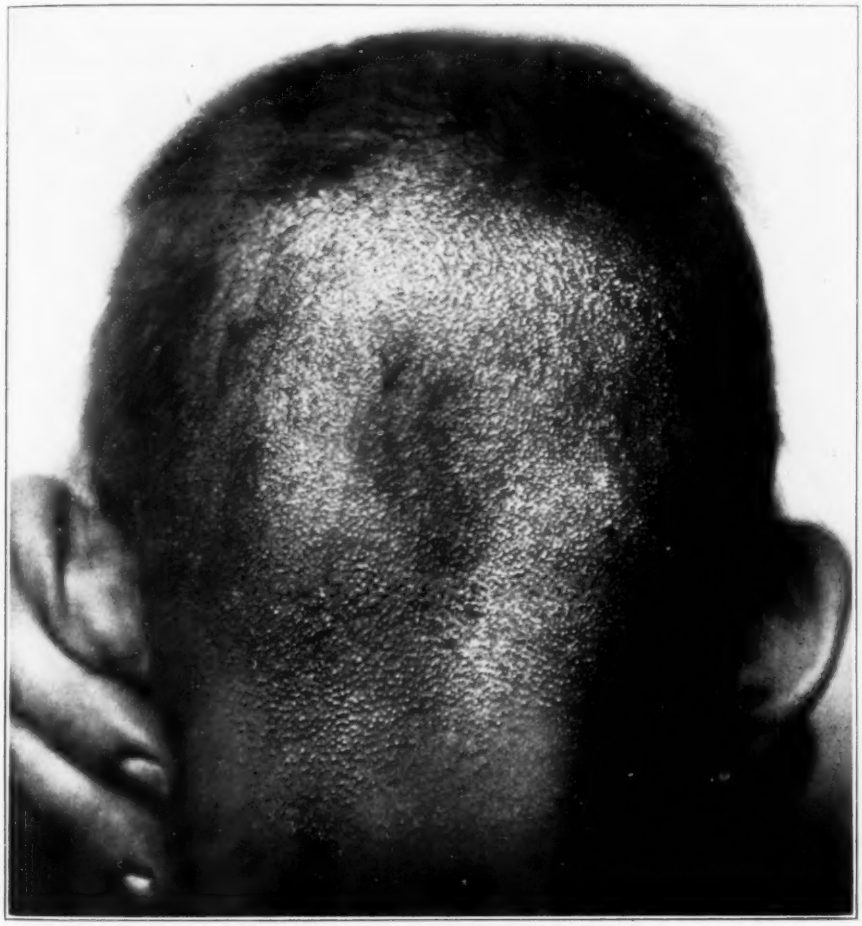


Fig. 4.—R. K., aged 11, with a process limited to the occipital region with marked keratosis pilaris and alopecia with scattered beaded and twisted hairs.

The scalp condition began a few months after birth. He now presented generalized alopecia in the frontal and occipital regions. Beaded hairs were present. The keratosis pilaris was mild, but there was a seborrhea sicca present. The forearms exhibited a mild keratosis pilaris, but none of the hairs was affected. Ears, eyes, teeth and nails did not show any defective development (Fig. 1).

Case 2.—B. K., a woman, aged 22, married, born in Russia, was affected to a greater extent than any of the others. The disease began a few weeks following birth with involvement of the scalp and axillae. At the present time, there was a generalized alopecia of the scalp, a thin, sparse growth of short, dry, beaded hairs and a marked keratosis pilaris. The axilla were also the site of the disease, a few of the hairs being beaded or dystrophic. On the forearms and legs was a mild keratosis pilaris (Fig. 2).

Case 3.—D. K., a man, aged 24, born in Russia, gave us permission to make a biopsy. He had a moderate, diffuse alopecia, numerous beaded hairs and a mild keratosis pilaris at the nape of the neck. The onset occurred about two weeks after birth (Fig. 3).

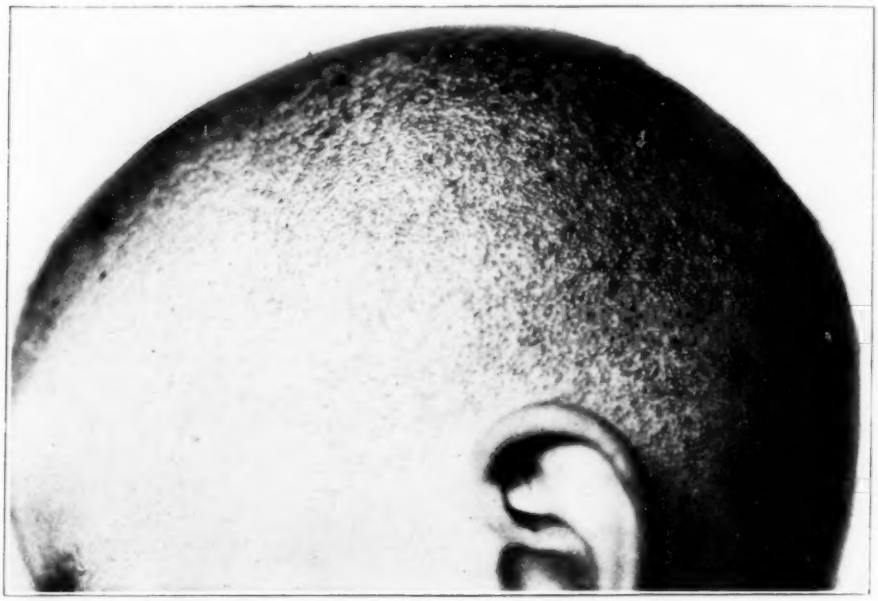


Fig. 5.—L. K., aged 4, with diffuse alopecia, marked keratosis pilaris and beading of the hairs.

Case 4.—R. K., aged 11, born in Russia, had had the disease since the age of 3 weeks. The disease was limited to the occipital region. On inspection a severe alopecia could be seen, a marked keratosis pilaris and numerous beaded hairs (Fig. 4).

Case 5.—L. K., a boy, aged 4, born in the United States, was the only child of one of the unaffected (recessive?) sons of S. K., and represented the fifth generation. The disease appeared at the age of 6 months and was limited to the scalp, which fitted tightly over the skull and was inelastic. The characteristic diffuse alopecia and beading of the hairs were present. The eyebrows were thin; in their outer third, they showed a moderate alopecia, but no beading could be observed (Fig. 5).

The chart (Fig. 6) prepared by Miss Bess Lloyd of the Department of Anatomy, Washington University, illustrates well the familial and hereditary nature of the disease. Five generations are shown, representing seven cases of the disease. I have studied the five cases in the third, fourth and fifth generations.

MICROSCOPIC STUDIES

The section for this study was obtained from Case 3, the specimen being removed from the vertex of the scalp under local anesthesia. Several beaded hairs and keratotic follicles were included. After being hardened in alcohol, the tissue was mounted in paraffin, stained with hematoxylin and eosin and polychrome methylene blue. Serial sections were cut.

The sections showed no signs of inflammation. The cutis was normal, the epidermis somewhat thin and attenuated. The rete pegs were irregular, there was a tendency to clumping, and they were thicker in places. The stratum

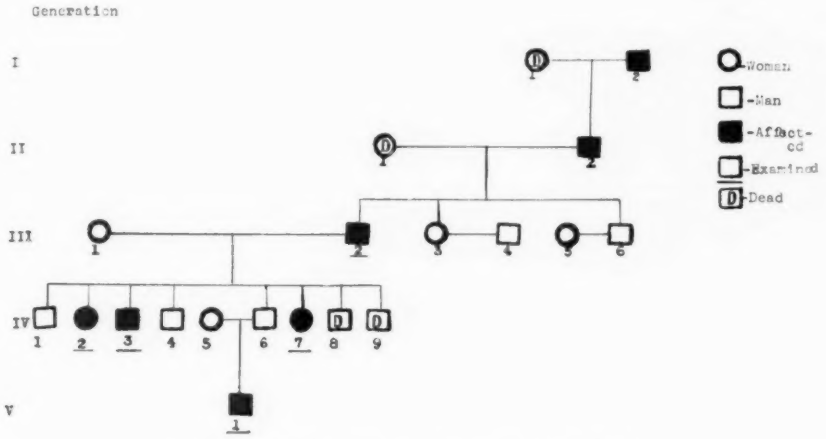


Fig. 6.—Family tree of the cases described.

corneum was wavy, but normal and dipped down into the mouths of the gaping follicles, forming horny plugs. Many of the sebaceous glands were normal, but some appeared shrunken and attenuated. The only thing of special interest was the condition of the hair follicles, which exhibited changes similar to those described by McKeen and Rosen,[9] except to a minor degree. The follicles were tortuous and deformed and showed distortion of shape and direction, some of them being bent to an angle. Although our sections were made serially, we did not find a papilla with the hair in the follicle of sufficient deflection without distortion to give us a satisfactory picture. In brief, our sections showed analogous changes demonstrated by other writers.

THE INFLUENCE OF HEREDITY

The part that heredity plays in the transmission and pathogenesis of disease of the skin is still vague, but it may be said to be a definite etiologic factor in the following diseases of the skin:

1. Certain types of nevi and ichthyosis, epidermolysis bullosa, keratosis palmaris et plantaris, xerodermia pigmentosum, multiple benign cystic epithelioma and von Recklinghausen's disease.

2. Diseases of the nails. Certain types of onychauxis and atrophia unguium.

3. Diseases of the hair. Certain forms of canities, alopecia and hypertrichosis, ringed hair and monilethrix.

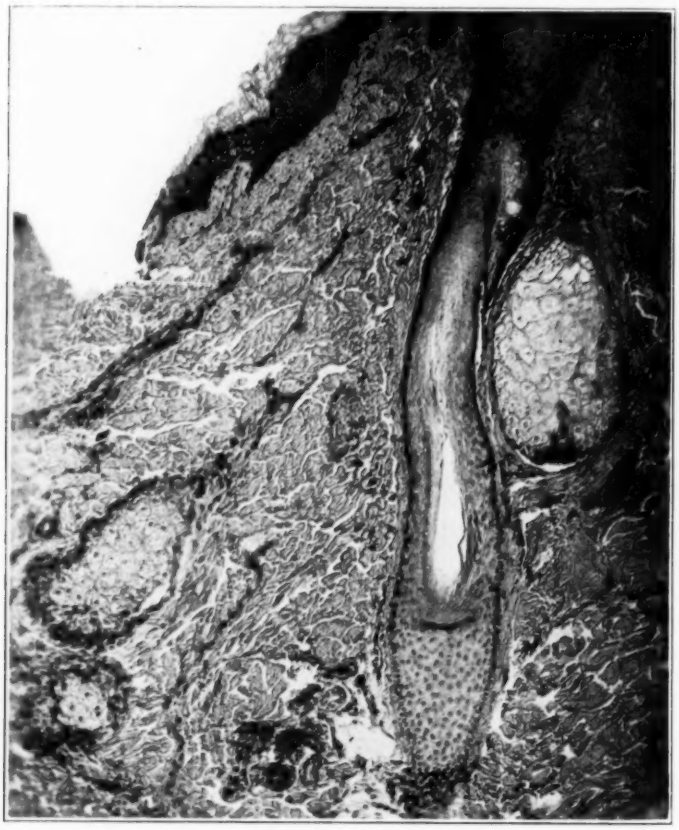


Fig. 7.—Section from scalp.

The members of this group may be further broadly classified into three divisions: (*a*) congenital dystrophies; (*b*) nevus affections; (*c*) ectodermal defects. It is admitted that in many of the cases accurate classification is difficult because of the lack of knowledge concerning the pathogenesis of these diseases.

Monilethrix may be definitely stated to be a hereditary affection. Numerous reported instances besides our own verify this assertion,

namely: Sabouraud,[17] with seventeen cases in five generations; Anderson,[18] with fourteen cases in five generations; Low,[16] with nine cases in four generations; Tenneson,[19] with six cases in two generations; Beatty and Scott,[20] with six cases in three generations, and Hudelo,[21] with five cases in four generations. Other investigators have reported less marked instances of the hereditary nature of the disease.

ETIOLOGY

Various interesting theories have been advanced to explain the peculiar pathogenesis of the disease. A few of these appear reasonable, but have no basic experimental support. Naturally, the parasitic theory was first advanced, but the findings have been uniformly negative in this respect. Mechanical theories of intrafollicular pressure have been advocated by Bonnet and others, only to be cast aside when the pathology became better understood, namely, that the disease arises from the formative papilla, as shown by Beatty and Scott [20] and McKee

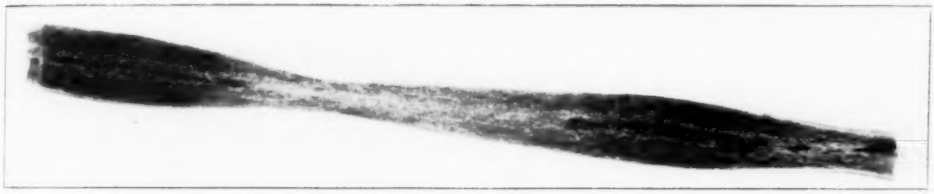


Fig. 8.—Monilethrix hairs.

and Rosen.[9] A theory that has met with approval is that the disease is a trophoneurosis, the result of some intermittent interference with the nervous or vascular supply of hair-growing apparatus, either alone or in combination, thus giving rise to a defective development at the internodes of the hair. What the fundamental influence is must be left to the imagination! Recently Golay [22] suggested that the endocrines and sympathetic nervous system are at fault. He ascribes the intermittent internodal changes to be sympathetic nerves and the associated keratosis pilaris to a dysfunction of the thyroid. However, he failed to obtain satisfactory results with glandular therapy.

---

17. Sabouraud: Moniliform Hairs, Ann. de dermat. et syph. **3**:781, 1892.
18. Anderson: Monilethrix, Lancet **2**:140, 1883.
19. Tenneson: Keratosis Pilaris and Aplasia Moniliformis of the Hair, Ann. de dermat. et syph. **3**:1146, 1892.
20. Beatty and Scott: Moniliform Haris, Brit. J. Dermat. **4**:171, 1892.
21. Hudelo: Familial Moniliform Aplasia of the Hair, Ann. de dermat. et syph. **3**:1144, 1892.
22. Golay: Monilethrix, Ann. de dermat. et syph. **3**:294, 1922.

I venture to suggest a theory that the disease is an ectodermal defect, although I have no experimental data to prove my contention. The fact that the disease is usually hereditary and is associated with a keratosis pilaris which seems to be related to the ichthyotic affections is strongly suggestive.

SUMMARY

1. Five cases of monilethrix are reported occurring in three generations of a family. Such a large number of cases of the familial type is unique in American literature.

2. The pathologic findings do not differ from those described by other writers, namely, hyperkeratosis of the follicles with intrafollicular, horny plugs, tortuous follicles and attenuated sebaceous glands.

3. The theory that the disease is an ectodermal defect of the skin is suggested.

HYPERGLYCEMIA AS AN ETIOLOGIC FACTOR IN CERTAIN DERMATOSES *

I. L. McGLASSON, M.D.

SAN ANTONIO, TEXAS

I use the term "eczema" [1] generically, for certain dermatoses herein considered were formerly included under that heading.

LITERATURE

A search of the literature bearing on the relation of metabolism to skin disorders will give little practical help. In 1913, Johnston made the statement: [2] "There need be no hesitation in saying that eczema is not concerned with the metabolism of the carbohydrates or fats." However, two years later Pels [3] studied the blood-sugar in fifty cases, including those from cases of the following conditions: acne vulgaris, psoriasis, eczema of various types, urticaria, erythema multiforme, furunculosis, hyperhidrosis, dermatitis herpetiformis, alopecia areata, rosacea, ecthyma and pemphigus foliaceus. His findings varied from 0.07 to 0.156 per cent. of blood sugar, averaging 0.107 per cent., and showed practically no increase above the normal blood sugar value, although tending toward the higher percentage limit. He concluded that "since the dermatologic manifestations of diseased conditions are frequently dependent in part on internal conditions, it is felt that further study of this problem may throw light on certain forms of dermatoses in which high sugar content will infer a probable alimentary hyperglycemia, the proper treatment of which may solve the all too frequent difficulty of the dermatologic therapy." In 1916, Highman, Schwartz and Mahnken [4] reported a series of blood sugar determinations in many of the common dermatoses and of a few rare ones. Their results were divided into two groups: (1) eighty-nine cases in which the sugar content was not increased, and (2) sixty cases in which hyper-

---

* Read before the Section on Dermatology and Syphilology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Hazen, H. H.: The Etiology of Eczema, Arch. Dermat. & Syph. **1**:642 (June) 1920.

2. Johnston, J. C.: Speculations as to the Cause of Eczema, J. Cutan. Dis. **21**:7, 1913.

3. Pels, I. R.: The Sugar Content of the Blood in Certain Diseases of the Skin, J. A. M. A. **65**:2077 (Dec. 11) 1915.

4. Schwartz, Highman and Mahnken: The Sugar Content of the Blood in Various Diseases of the Skin, J. Cutan. Dis. **34**:159, 1916.

glycemia was more or less constant, the conditions being acne, seborrhea and sycosis. In this second group, twenty-six had excessive blood sugar, twenty-four a normal amount and ten were on the borderline. They stated that "without drawing extensive conclusions from these facts there does appear to be a selective force at work causing this association between diseases of the pilosebaceous follicles and an excess of blood sugar."

Pick,[5] in 1921, found an almost constant increase of blood sugar in fifteen cases of psoriasis—the average being 0.135 per cent.—a slight increase in the majority of seven cases of furunculosis, and a moderate hyperglycemia in six of twelve cases of secondary syphilis.

COMMON SKIN MANIFESTATIONS IN DIABETES

The more common skin manifestations found associated with diabetes are furuncles, gangrene, carbuncles, genital pruritus and xanthoma. Genital pruritus has been mentioned as one of the earliest symptoms of diabetes. Sherwell[6] enumerates the cutaneous disorders observed in diabetes as follows:

> Generalized xeroderma, which is quite common; eczematous dermatitic manifestations occurring in any region of the skin, especially prone to attack the flexor surfaces, and more especially the genital, anal and inguinal regions; furuncular and carbuncular manifestations are quite frequent in this condition, and are found generally in the nuchal and gluteal regions; erythematous lesions, some evanescent, others of the gravest kind, as erysipelas, are sometimes present; gangrene, dermatitis herpetiformis; xanthoma diabeticorum, and blastomycetic dermatitis.

A bronzing is also known as a skin complication of diabetes. Such skin conditions have been cited when there appeared a glycosuria, which is supposed to appear when the blood sugar reaches a concentration around 0.16 per cent. (the threshold point[7]).

BEGINNING OF THIS STUDY

The beginning of this study was made on the basis of three cases: (1) In Case 1, the patient had genital pruritus. Urinalysis showed 5 per cent. sugar, and blood sugar was found to be 0.24 per cent. She was relieved of her pruritus by proper attention to the diabetes. Since this time blood chemistry studies have been made in all cases of genital pruritus, regardless of local findings, ringworm infection, etc.

---

5. Pick, W.: Blood Sugar Estimation in Psoriasis, Furunculosis and Syphilis, Dermat. Wchnschr. **72**:297; abstr., Arch. Dermat. & Syph. **4**:834, 1921.

6. Sherwell, LePine, R.: Diabetes Mellitus, Sajous Analytic Cyclopedia of Practice of Medicine, Ed. 8 rev., Philadelphia, F. A. Davis Co. **6**:37, 1921.

7. Meyers, V. C.: Practical Chemical Analysis of the Blood, St. Louis, The C. V. Mosby Co., 1921, p. 59.

(2) In Case 3, the patient had a generalized flexural eczema involving all apposed surfaces. She was a fleshy woman, and the axillae, groins, the folds of the breasts and neck and the popliteal areas were all denuded of epithelium, presenting raw, red, weeping surfaces. Pruritus was intense. Urinalysis showed 5 per cent. sugar, and the blood sugar was 0.22 per cent. A diabetic regimen cleared up her condition promptly, and she has had no return of the skin trouble in three years.

(3) In Case 4 the patient had large reddened, thickened plaques which appeared to belong to the seborrhoids. The largest plaque extended from the left axilla down below the costal margin. All flexures were eczematous. Urinalysis showed 6 per cent. sugar, and blood chemistry 0.18 per cent. sugar. Relief was obtained under dietetic measures. He had had two attacks in three years, but attention to diet was sufficient to clear them up promptly.

Patients with negative urine presenting lesions similar to the foregoing did not respond to the ordinary cutaneous therapy readily, if at all. Blood sugar determinations were made, and the findings in such cases were so nearly uniform that the question then naturally arose as to the significance of the hyperglycemia.

A blood sugar estimation was made on another patient with intertriginous eczema and was found to be 0.18 per cent., and there was no glycosuria. Following this, increased blood sugar was found in many patients with intertrigo. Other conditions were found associated with these cases. After about thirty estimations on selected cases we made blood-sugar studies on all patients who presented cutaneous manifestations, which we have divided into six groups, given below.

In considering the etiology of the dermatoses herein presented we have eliminated as nearly as possible those cases in which external irritants and any other toxic internal causes could have played a part, realizing that these factors could produce dermatoses similar to those described in the six groups. In selecting our cases we did not attempt to make estimations on sycosis, seborrhea and acne, all being conditions which we feel sure are generally associated with hyperglycemia.

Two hundred and five blood-sugar estimations were made in 158 cases. Of these, 132 were classified as shown below. The remainder were found in dermatoses in which increased blood sugar played little or no part in therapy.

The normal sugar content was at first taken to be from 0.08 to 0.12 per cent., but after studying the cases which fitted into any of the six groups whose blood-sugar findings were near the higher figure, and after clinical improvement in them on restricted carbohydrate

diets, we consider that 0.11 per cent. is the upper limit of the normal blood-sugar content. Normal sugar content of blood is taken by various observers [8] to be from 0.06 per cent. to 0.11 per cent.

KIDNEY THRESHOLD FOR SUGAR

Urinalyses were not made synchronously with all of the blood-sugar determinations. In those cases in which hyperglycemia approached the threshold point of 0.16 per cent., urinalysis was made. However, glycosuria was found infrequently in our cases in which the blood sugar was above this point. This is easily explained, as those having urine sugar were being treated by internists, and the diabetes had already been recognized; whereas our patients consulted us for their dermatologic symptoms only. Cases 19, 21 and 23 showed blood-sugar readings of 0.25, 0.237, and 0.238 per cent., respectively, with no glycosuria. According to various observers, a high threshold point [7] previals during a late nephritis, but we were unable to determine any kidney damage by ordinary urinalyses, and there were no symptoms that warranted further consideration of this phase. In two cases (Case 63 in which there was 0.235 per cent. blood sugar, and Case 92 in which there was 0.151 per cent. blood sugar) with no glycosuria there was a history of glycosuria several years previously. I do not attempt to speculate on the question of what the normal threshold is, but I would call attention to a statement by Allen and Wisehart: [9]

> (1) A brief glycosuria is attended by a lowering of the sugar threshold of the normal kidney, so that as the hyperglycemia is subsiding, sugar continues to pass into the urine with a lower level of blood-sugar than that which is necessary to cause glycosuria at the outset. (2) Prolonged glycosuria or hyperglycemia is attended with an elevation of the sugar threshold, so that glycosuria may remain absent with a blood sugar level considerably higher than that at which sugar excretion ordinarily occurs. (3) Renal abnormalities, either spontaneous diseases or drugs and other agencies, may either increase or diminish this permeability.

It is interesting to note that in a case of xanthoma diabeticorum, described by Robinson [10] at the American Dermatological Association in 1896, there were gallstones and nephritis but no glycosuria. In the light of our present day knowledge, this case would probably have been diagnosed diabetes with a high kidney threshold for sugar on account of a nephritis.

---

8. Gray, H.: Blood Sugar Standards. Part I. Normal and Diabetic Persons, Arch. Int. Med. **31**:241 (Feb.) 1923.

9. Allen, F. M., and Wisehart, M. B.: The Renal Threshold for Sugar and Some Factors Modifying It, J. Biol. Chem. **43**:129, 1920.

10. Robinson, A. R.: Xanthoma Diabeticorum, J. Cutan. Dis. **14**:488, 1896.

METHODS OF MAKING BLOOD-SUGAR ESTIMATIONS

The gravimetric method of Gradwohl was used in most of the determinations, and a colorimetric method was also used on many specimens. All determinations were made by the same chemist, Mr. H. Nester of Dr. B. F. Stout's laboratory.

Gravimetric method, Nester's modification of Simon: The blood was weighed on an analytic balance; then 5 gm. of anhydrous sodium sulphate, 5 drops of 25 per cent. acetic acid and 40 c.c. of water were added. This was brought to a boil, precipitating all proteins. It was then filtered and washed free of acid. Fehling's solution was used for the reducing agent, filtering the cuprous oxid on an ashless filter of very fine texture, washing free of all alkali and copper sulphate. The cupric oxid was burned and weighed, using for each milligram of cupric oxid the factor 0.44 for dextrose. The original amount of blood fount was divided into the dextrose estimated, giving the percentage. These results were checked by redissolving the cupric oxid in hydrochloric acid and adding potassium iodid and estimating copper with sodium thiosulphate.

Colorimetric method, Gradwohl modification of Lewis-Benedict: Five hundred cubic centimeters were added to 20 c.c. of water. To this 500 milli-

TABLE 1.—*Comparison of Methods of Blood-Sugar Determinations*

Method	Average Error Percentage	Greatest Error Percentage	Number of Analyses
Bang	2.7	8	22
Hagedorn	3.2	9	22
Benedict	3.0	7	22
Folin	4.5	10	19

grams of picric acid were added and all brought together intimately in order to precipitate all proteins. This was allowed to stand fifteen or twenty minutes, then centrifuged and filtered. Of the filtrate 3 c.c. were taken and 1 c.c. of saturated solution of carbonate of soda was added. This was placed in a boiling water bath for fifteen minutes and the color developed and compared with standard.

Statistics compiled by Horace Gray [8] (from six series, only two of which were of satisfactory statistical size) showed that of 431 fasting blood-sugar determinations in normal cases, the average was 0.09 per cent.; the most frequent was 0.1 per cent.; the minimum was 0.04 per cent.; the maximum was 0.16 per cent. The methods employed in the two series were: (1) the Myers and Bailey technic used by Goto and Kuno in fifty-three cases; (2) the Cummings and Piness' modification of the Lewis and Benedict method used by Cummings and Piness in fifty-eight cases. A comparison of the methods of Bang-Hagedorn, Jensen, the Myers-Bailey modification of Lewis-Benedict and Folin-Wu was made by Host and Hatlehol [11] on normal and diabetic blood in a series of cases. Their comparison is given in Table 1.

11. Host, H. F., and Hatlehol, R.: Blood Sugar Concentration and Blood-Sugar Methods, J. Biol. Chem. **42**:347 (June) 1920.

After our work appeared to be so interesting, checking was begun by making both colorimetric and gravimetric estimations. This was done in seventy-eight cases. The result is shown in the tables. In addition, we had blood-sugar estimations made by two laboratories, one using the technic described above and the other the newer Folin-Wu method with the Duboscq colorimeter, with the following results.

TABLE 2.—*Results with Simon Gravimetric Method and Folin-Wu Method*

Case No.	Simon Gravimetric Method Percentage	Folin-Wu Method Percentage
1	0.101	0.10
2	0.126	0.114
3	0.112	0.125
4	0.112	0.121
5	0.124	0.111
6	0.12	0.114
7	0.108	0.10
8	0.12	0.097
9	0.179	0.16
10	0.097	0.08

It will be seen that the variations are slight and are no greater than are found in comparing Wassermann tests and many other laboratory methods, and may be considered negligible.

CLASSIFICATION OF CASES

Grouping was a difficult problem, not dissimilar to the difficulties in classifying skin diseases. The following grouping is presented with admitted imperfections. As would be expected, many cases presented characteristics that would place them in more than one group, and they are so noted. Of the 158 cases in our series, twenty-six were placed in a miscellaneous group. The remaining were placed in one or more of five groups. All determinations were made after an all night fast before the patient had taken breakfast.

DISCUSSION OF CASES

It is obvious that a discussion of the entire 158 cases cannot be undertaken, but only a few representative case histories will be given. They present examples of the different types studied.

There were four cases of urticaria in Group 6, three of which showed a finding above 0.11 per cent.

The patient in Case 20 (Maj. B., Fig. 1) had pruritus ani with maceration of the skin about the anus. The condition had persisted for months in spite of the usual methods of treatment, including the roentgen ray. His blood sugar was 0.18 per cent. (colorimetric. U. S.

Gov't Lab., Ft. Sam Houston). On carbohydrate restricted diet the condition became normal in two weeks.

The patient in Case 29 (J.) had remittent crops of boils over the nape of the neck and scalp with a painful folliculitis. Each time he indulged in carbohydrates excessively the condition recurred, and he has been able to hold it in abeyance by diet. His first test showed 0.148 per cent. blood sugar. Both of the foregoing cases fitted into Group 1.

The patient in Case 35 (Fig. 2) had a seborrheic dermatitis (Group 2), a flexural dermatitis (Group 3) and genital pruritus (Group 1). His first blood sugar estimation was 0.194 per cent., yet glycosuria was never found. His condition persisted for twenty years. He also had

Fig. 1 (Case 20).—Pruritus ani. Mycelium was found. The blood-sugar estimation was 0.18 per cent.

eczematoid plaques which were very rebellious to treatment, at times weeping, at other times lichenified.

The patient in Case 88 (Fig. 3) presented a seborrheic dermatitis of the face with a patch of lichenification on the left buttock and a blood-sugar of 0.126 per cent. (gravimetric).

The patient in Case 27 presented a fiery red face and chest with a dry scaly skin with burning and itching. The scales on the cheeks and bridge of the nose and sides of the face were firmly attached, and on removal presented keratotic plugs. The picture strongly suggested acute disseminate lupus erythematosus. She failed to respond to any treatment. Her blood-sugar finding was 0.213 per cent., and after

modifying the diet her skin cleared without a trace of atrophy. She had had a few slight plaques on her face occasionally, but resumption of strict dieting for a short time always brought relief. Her weight was 20 pounds (9.07 cm.) less than when she was first seen. The

Fig. 2 (Case 35).—Seborrheic dermatitis.

Fig. 3 (Case 88).—Neurodermite on left buttock.

attention she gives dieting now consists in restriction of carbohydrates with an occasional blood-sugar estimation.

The patient in Case 74 (C.) fitted in Groups 2 and 3. His first sugar content was 0.124 per cent. (gravimetric method). He had dieted since August, 1922, at times rigidly, when the dermatitis exhibited a tendency to recur, and now was free of any skin irritation, especially

of the flexures, for the first time in ten years. His last blood-sugar content (May, 1923) was 0.09 per cent.

The patient in Case 19 (C., Fig. 4) first seen on June 11, 1922, was placed in Groups 1, 3 and 4, his blood sugar being 0.25 per cent., with no glycosuria. A high threshold point was thus found, but there was no indication of a nephritis. However, granular casts had been found in his urine about six months previously. The patient was a professor, aged 48, of slender build. His present trouble started in September, 1921, with a dull aching pain in the epigastrium, which

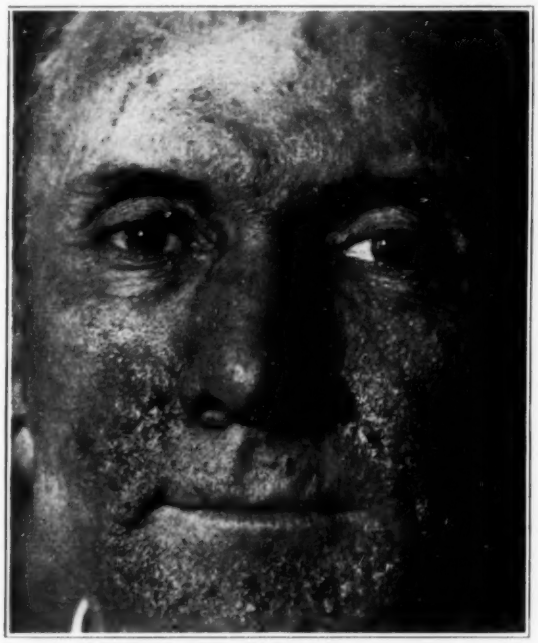


Fig. 4 (Case 19).—Seborrheic (toxic) dermatitis.

was reflected to the right side of the back between the scapulae, occurring when he was hungry and being relieved by eating. He had had a previous attack three years before. He had never had any nausea or jaundice, but friends had called his attention at times to yellowish sclerae. Genital pruritus was the first skin manifestation, and it started in September, 1921, and was followed by flexural dermatitis. He had been under observation for eleven months and was a diabetic. His skin had been almost clear at times. His skin presented pictures that would put him in any of the five groups. This is a case that could form the basis of study for a whole paper.

TABLE 3.—*Group 1. Confirmed Diabetics or Patients Having Manifestations Often Found in Diabetes* **

Case No.	Date	Blood Sugar Percentage	Remarks
1		0.24	Genital pruritus; a diabetic; urine sugar
2		0.19	Xanthoma diabeticorum; a diabetic
3		0.22	Intertrigo; genital pruritus; a diabetic; also in Group 3; urine sugar
4		0.18	Intertrigo; a diabetic; urine sugar
8		0.121	Anal pruritus
13		0.212	Ulcer at site of roentgen-ray burn
16		0.205	Genital pruritus; also in Group 3
18		0.18	Genital pruritus
19		0.25	Furunculosis; also in Groups 3 and 4
20		0.18	Anal pruritus
24		0.165	Genital pruritus; also in Groups 2 and 3
26		0.127	Furunculosis; also in Group 2
29		0.148	Furunculosis
	6/23/22	0.138	
	7/ 7/22	0.153	
	10/ 2/22	0.166	
	12/ 4/22	0.167	
	12/20/22	G.0.133	
		C.0.126	
30	6/23/22	0.138	Furunculosis
	7/ 7/22	0.153	
32		0.067	General pruritus; also in Groups 2 and 3
33		0.167	Genital pruritus
35	7/10/22	0.194	Genital pruritus; also in Groups 2 and 3
	8/22/22	0.082	
36		0.127	Furunculosis
43	8/10/22	0.153	Furunculosis
	9/19/22	0.125	
58	9/18/22	0.164	Furunculosis and angioneurotic edema; also in Group 6
62	9/ 5/22	0.225	Furunculosis
	9/27/22	0.198	
	11/17/22	0.159	
	3/ 2/23	G.0.161	
		C.0.16	
70		0.105	Furunculosis
82		G.0.124	Furunculosis and pruritus ani
		C.0.135	
85		G.0.111	Furunculosis and buccal ulcers
		C.0.124	
92		G.0.151	Furunculosis
		C.0.136	
93		G.0.160	Furunculosis with acne
		C.0.168	
108		G.0.135	Folliculitis
		C.0.156	
110		G.0.125	Pruritus
		C.0.132	
112		0.121	Ulcer perforans foot
113		0.061	Genital pruritus
117		0.136	Carbuncles
131		G.0.115	Folliculitis
		C.0.125	
133		0.144	Anal pruritus
143		G.0.167	Furunculosis
		C.0.129	
146		G.0.17	Furunculosis
		C.0.148	
111		G.0.134	Genital pruritus
		C.0.144	
142		G.0.121	Anal pruritus
		C.0.144	

37 Cases

Above 0.12	34	91.89%
Above 0.11	34	91.89%

* These manifestations were: anal or genital pruritus, furunculosis, folliculitis, ulcer and xanthoma diabeticorum.

TABLE 4.—*Group 2, Patients with Seborrheic Dermatitis**

Case No.	Date	Blood Sugar Percentage	Remarks
9		0.15	Also in Groups 3 and 4; seborrhoids of the face, neck and eyelids
	1/18/23	G.0.151 C.0.147	
26		0.127	Also in Group 1; generalized pruritus
24		0.165	Also in Groups 1 and 3; patches of seborrheic dermatitis covering face, eyelid and neck
28		0.209	Genital pruritus; weeping eczematous patches of the face; all flexures, etc.
31		0.114	Flexural dermatitis; pruritic
32		0.067	Also in Groups 1 and 3; generalized pruritus
34		0.197	Also in Group 3; flexural dermatitis and weeping eczematous patches on face
35		0.194	Also in Groups 1 and 3; patches of seborrheic dermatitis covering face, eyelid and neck
37		0.114	
39		0.209	Also in Groups 3 and 4; flexural dermatitis and patches on the neck
40	7/20/22	0.134	Reported in detail
	11/21/22	G.0.152 C.0.144	Reported in detail
	11/22/22	0.143	Reported in detail
49		0.139	Reported in detail
51		0.225	Patches of seborrheic dermatitis
56		0.163	Seborrheic patches involving ears and neck only
64	4/23/22	0.121	Also in Groups 3 and 4; reported in detail
	10/ 1/22	0.137	
	2/21/22	G.0.137 C.0.144	
65	9/11/22	0.133	Also in Groups 3 and 4; severe flexural dermatitis and seborrheic patches over the face
	10/ 7/22	0.127	
	10/24/22	G.0.098 C.0.08	
66		0.108	Also in Group 4; seborrheic patches, scaly and red, on face and neck
72		G.0.105 C.0.114	Also in Group 3; face and chest inflamed and scaly
74		0.124	Also in Group 3; reported in detail
	10/13/22	G.0.118 C.0.112	
75		G.0.109 C.0.12	Seborrheic dermatitis on face
80		0.087	Generalized seborrhea
87		0.165	Seborrheic dermatitis of face, eyes and neck
88		G.0.126 C.0.12	Seborrheic dermatitis of face and neurodermite
98		G.0.131 C.0.126	Seborrhea, with much itching of face, neck and arms.
100		G.0.169 C.0.156	Scaly patches of seborrhea on face, neck, ears, scalp, etc.
102		G.0.116 C.0.110	Eczema on face
103		G.0.125 C.0.144	Eczema on ears
107		G.0.14 C.0.141	Eczema on ears and face.
114		0.125	Seborrhea on face and scalp
118		0.18	Seborrheic patches on chest
126		G.0.173 C.0.150	Nummular sized red patches over face, eyelids, neck, etc.
128		0.102	Seborrhea oleosa
137		G.0.105 C.0.138	Seborrhea and acne
138		G.0.121 C.0.15	Seborrhea on chest and face
140		G.0.116 C.0.123	Greasy seborrhea and acne
141		G.0.179 C.0.153	Also in Groups 4 and 5; seborrheic dermatitis of face and chest
148		G.0.131 C.0.135	Seborrhea oleosa
151		G.0.104 C.0.117	Seborrhea sicca
79		G.0.13 C.0.117	Seborrheic dermatitis with intense itching
116		0.134	Generalized seborrheic dermatitis
122		0.18	Diabetes—generalized pruritus
129		0.129	Flexural dermatitis—itching intense
144		G.0.145 C.0.15	
145		G.0.17 C.0.148	Seborrheic patches—recurrent

44 Cases

Above 0.12	34	77.27%
Above 0.11	40	90.9 %

* The skin is characterized by erythema, scaling, thickening, edema and lustrelessness. The face, especially the eyelids, ears and nape of the neck, are usually involved with or without flexural dermatitis.

TABLE 5.—*Group 3, Flexural Dermatitis* *

Case No.	Date	Blood Sugar Percentage	Remarks
9		0.15	Also in Groups 2 and 4; seborrheic dermatitis
16		0.205	Also in Group 1; flexural dermatitis on inguinal folds
17		0.18	Intertriginous eczema
19		0.25	Also in Groups 1 and 4; flexural dermatitis
	7/29/22	0.15	
	9/ 1/22	0.177	
	10/ 9/22	G.0.128	
		C.0.082	
	12/27/22	0.152	
22		0.188	Also in Group 4; flexural dermatitis of elbow and knee
24		0.165	Also in Groups 1 and 4; flexural dermatitis of elbows and knees
32		0.067	Also in Groups 1 and 2; flexural dermatitis of inguinal folds
34		0.197	Also in Group 2; flexural dermatitis of popliteal space
35		0.194	Also in Groups 1 and 2; flexural dermatitis on knees and elbows
39		0.209	Also in Groups 2 and 4; flexural intertriginous dermatitis involving all flexures, including breasts, axillae and neck
48		0.17	Also in Group 4
55		0.152	Also in Group 5; flexural dermatitis involving wrists, elbows and knees
63		0.235	Also in Group 4; flexural dermatitis involving elbows and knees
64	4/23/22	0.121	Also in Groups 2 and 4; reported in detail
	10/ 1/22	0.127	
	2/21/23	G.0.137	
		C.0.144	
65	9/11/22	0.133	Also in Groups 2 and 4; flexural dermatitis involving elbows and knees
	10/ 7/22	0.127	
	10/24/22	G.0.098	
		C.0.08	
71		G.0.105	Also in Group 4; seborrheic eczema
		C.0.114	
72		G.0.105	Also in Group 2; flexural dermatitis involving knees, wrists and elbows
		C.0.114	
74	8/ 3/22	0.124	Also in Group 2; reported in detail
	10/13/22	G.0.118	
		C.O.112	
135		G.0.132	Also in Group 4; flexural dermatitis involving elbows and knees
		C.0.135	
147		0.182	Also in Group 4; flexural dermatitis involving elbows and knees
150		G.0.127	Also in Group 4; flexural dermatitis involving elbows and knees
		C.0.141	
25		0.252	Flexural dermatitis
50		0.262	Diabetic with flexural dermatitis
99		G.0.121	Flexural dermatitis and patches on face
		C.0.150	
116		0.134	Seborrheic dermatitis slightly flexural
119		0.139	Flexural dermatitis
122		0.18	Diabetic with flexural dermatitis, with generalized pruritus
123		0.17	Seborrheic, papular, patchy dermatitis
129		0.129	Flexural dermatitis
134		G.0.156	Flexural dermatitis involving elbows and knees
		C.0.120	
142		G.0.121	Flexural dermatitis, patchy
		C.0.144	
158		G.0.24	Flexural dermatitis
		C.0.245	

32 Cases

Above 0.12	29	90.62%
Above 0.11	31	96.87%

* The skin is characterized by erythema, tiny papules and weeping with maceration of the epidermis, if acute, and dry, scaly, thickened skin, if of long standing.

TABLE 6.—*Group 4. Toxic Rash with or Without Flexural Dermatitis* *

Case No.	Date	Blood Sugar Percentage	Remarks
9		0.15	Also in Groups 2 and 3; seborrheic dermatitis of eyelids, face and neck
10	3/22/22	0.175	Flexural dermatitis, scattered patches of dermatitis over trunk
	3/ 5/23	G.0.152 C.0.142	
12	6/ 3/22	0.18	Urticaria, furunculosis, etc.
	6/24/22	0.166	
	7/31/22	0.132	
14		0.125	Furunculosis and urticaria
19		0.25	Also in Groups 1 and 3 (see Group 1)
22		0.188	Also in Group 3 (see Group 3)
24		0.165	Also in Groups 1 and 2 (see Groups 1 and 2)
39		0.209	Also in Groups 2 and 3 (see Groups 2 and 3)
45		0.111	Also in Group 5; diffuse erythema
	11/29/22	G.0.16 C.0.161	
48		0.17	Also in Group 3; general erythema
63		0.235	Also in Group 3; diffuse erythema
64	4/23/22	0.121	Also in Groups 2 and 3; reported in detail
	10/ 1/22	0.137	
	2/21/23	G.0.137 C.0.144	
65	9/11/22	0.133	Also in Groups 2 and 3 (see Groups 2 and 3)
	10/ 7/22	0.127	
	10/24/22	G.0.098 C.0.08	
66		0.108	Also in Group 2 (see Group 2)
71		G.0.105 C.0.114	Also in Group 3 (see Group 3)
77		0.092	Generalized toxic rash
78		0.173	Toxic rash with flexural dermatitis
81		G.0.106 C.0.111	Toxic rash on arms, neck and legs
83	11/ 6/22	G.0141 C.0.132	Generalized pruritus
	12/18/22	G.0.156 C.0.141	
86		0.122	Toxic rash over chest and neck
91		G.0.161 C.0.132	Flexural dermatitis on arms, legs, etc.
94		G.0.157 C.0.144	See Groups 2 and 3
97		0.114	Generalized pruritus
116		0.138	Erythematous scaly patches on legs; had a cholecystotomy
124		0.144	Diffuse erythema; generalized pruritus
132		G.0.130 C.0.132	Erythema and mild acne over back and chest Intense pruritus
135		G.0.132 C.0.135	Also in Group 3; erythema over arms and chest
141		G.0.179 C.0.153	Also in Groups 5 and 2; acute dermatitis on chest, face, fore-arms, especially volar surfaces
147		0.182	Also in Group 3; papulo-erythematous eruption on flexor surfaces of legs and fore-arms
150		G.0.127 C.0.141	Also in Group 3 (see Group 3)
154		G.0.136 C.0.132	Generalized pruritus—erythema over trunk
155		G.0.127 C.0.135	Flexural dermatitis on neck and face
47		0.17	Toxic rash
89		G.0.17 C.0.15	Pruritus involving legs
104		G.0.110 C.0.140	Toxic rash
119		0.139	Toxic rash
123		0.017	Papular dermatitis, toxic rash (see Groups 2 and 3)
149		G.0.163 C.0.160	Urticaria
158		G.0.24 C.0.245	Diabetic with flexural dermatitis Urine 3%

39 Cases

Above 0.12 34 87.17%
Above 0.11 36 92.3 %

* This skin is usually oily, and the eruption is admixed with vesicles, or large or small papules.

TABLE 7.—*Group 5, Vesicular or Vesicopustular Eruptions of Hands, Feet and Crotch—Similar to Epidermophytosis*

Case No.	Date	Blood Sugar Percentage	Fungus Found
15		0.141	No; toxic, vesicular rash over arms and legs
21		0.237	No; toxic, vesicular rash over arms and legs
	8/31/22	0.135	
	9/16/22	0.125	
	3/11/23	G.0.125	
		C.0.136	
23	6/22/22	0.238	No; eczematoid ringworm
	7/22/22	0.142	
	8/ 5/22	0.101	
	10/ 1/22	0.181	
	10/14/22	G.0.119	
		C.0.12	
	3/12/23	0.103	
44	8 / 7/22	0.2	Yes; vesicopustular dermatitis of hands and feet
	9/16/22	0.142	
	10/13/22	G.0.124	
		G.0.10	
45		0.111	Yes (see Group 4)
	11/29/22	G.0.16	
		C.0.161	
53		0.152	Yes (see Group 4)
60		0.181	Yes; eczematoid ringworm
61	9/22/22	0.163	No; scaly, patchy eruption of hands
	10/25/22	0.129	
67		0.13	No; vesicopustular eruption and furuncles
76		G.0.13	No; eczema of ear
		C.0.11	
84	11/11/22	G.0.124	No; vesicopustular patches on hands, etc.
		C.0.111	
	1/ 8/23	G.0.153	
		C.0.135	
95		G.0.190	No; eczematoid patches on feet
		C.0.18	
101	1/24/23	G.0.16	No; vesicopustular lesions on hands
		C.0.156	
	3/ 7/23	G.0.121	
		C.0.15	
106		G.0.111	Yes; vesicopustular lesion resembling pompholyx
		C.0.144	
125		0.113	No; eczematoid ringworm
127		G.0.122	No; acute vesicular eruption on palms and soles
		C.0.138	
136		G.0.11	Seborrheic patches and acne
		C.0.147	
139		0.102	Yes; eczematoid ringworm
141		G.0.179	No; also in Groups 3 and 4; vesicopustular lesions on hands, weeping and highly inflamed
		C.0.153	
156		G.0.157	No; diabetic eruption on face, upper lip, eyelids and hands
		C.0.16	
157		G.0.108	No; scattered vesicles on phalanges and dorsum of hand
		C.0.129	
121		0.111	No

22 Cases

Above 0.12	*20*	90.9 %
Above 0.11	*21*	95.45%

The patient in Case 40 (B., Fig. 5) had had three severe attacks of seborrheic dermatitis en plaques of the face, once attended with furunculosis on the nape of the neck. Each time he had indulged in more carbohydrate food than was advised, and each time diet (with local applications) brought relief.

The patient in Case 17 (C., Fig. 6), a baby, 6 months of age, since the age of 3 weeks had had a severe infantile eczema of the face and all flexures, in which the maceration produced a raw, oozing surface.

TABLE 8.—*Group 6, Miscellaneous Cases*

Case No.	Date	Blood Sugar Percentage	Diagnosis
5		0.084	Palmar keratosis
11		0.115	Prurigo mitis
27		0.213	Lesions simulating lupus erythematosus disseminatus
	7/28/22	0.089	
	8/30/22	0.11	
	10/12/22	G.0.093	
		C.0.102	
38		0.101	Prurigo mitis
41		0.161	Urticaria
42		0.151	Prurigo nodularis
46		0.147	Vesicular syphilid
52		0.162	Seborrheic keratoses and epithelioma
54		0.166	Vitiligo
55		0.187	Prurigo mitis
	10/ 4/22	0.09	
	10/26/22	G.0.103	
		C.0.12	
57		0.154	Psoriasis
58		0.164	Angioneurotic edema; also in Group 1
59		0.121	Psoriasis
68		0.104	Varicose ulcer
69		0.151	Urticaria
73		G.0.07	Vaginal ulcer
		C.0.108	
90		0.187	Syphilis and diabetes
105		0.109	Urticaria
109		G.0.147	Urticaria
		C.0.168	
130		G.0.117	Buccal ulcers
		C.0.114	
152		0.08	Dermatitis exfoliativa
153		G.0.115	Generalized pruritus
		C.0.132	
6		0.109	Pruritus hiemalis
7		0.154	Erythema multiforme
96		0.167	Hodgkin's disease
120		G.0.048	Toxic dermatitis
		C.0.117	

The mother's fasting blood sugar was 0.18 per cent., and after she had been on the diet two weeks the baby's skin had healed and has remained well.

The patient in Case 63, a nurse, aged 25, presented a generalized pruritus on a skin that was markedly erythematous and dermatographic. There was a slightly papular dermatitis affecting the cubital and popliteal fossae. Her blood sugar was 0.231 per cent., with no glycosuria. She admitted, after this finding, that a diagnosis of diabetes had been made two years previously.

The patient in Case 12, a man, aged 60, first seen on April 22, 1922, had a generalized pruritus and a toxic rash which was evanescent on

different parts but more or less constant on the outer surface of the legs, about the ankles, popliteal spaces and nape of the neck. The skin was thickened and exhibited scratched papules in the flexures. The duration of the trouble was nine months. His first blood-sugar estimation was 0.12 per cent. He, having what was then considered a

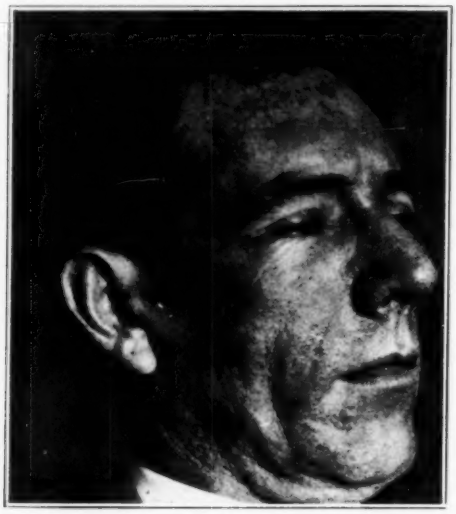


Fig. 5 (Case 40).—Seborrheic dermatitis en plaque.

Fig. 6 (Case 17).—Intertrigenous eczema.

borderline percentage, was not put on a diet. On Oct. 1, 1922, he returned, with an exaggerated picture. A second blood-sugar determination was made and showed 0.137 per cent. When placed on the diet his symptoms were ameliorated much faster than when treated before, and he left with hardly any skin irritation. He again returned

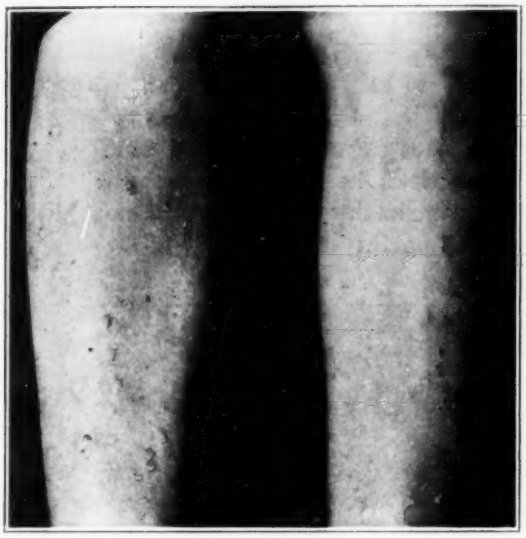


Fig. 7 (Case 21).—Vesicular eruption. No fungi were found.

Fig. 8 (Case 44).—Vesicular dermatitis. Fungi were found.

on Feb. 21, 1923, with the same skin picture and furuncles on the neck. His blood sugar then was 0.137 per cent. (gravimetric), and 0.144 per cent. (colorimetric). This time he accepted the suggestion of dieting more favorably, and he was again relieved.

The patient in Case 21 (Fig. 7) presented a vesicular eruption of the feet and legs. The skin was not very erythematous, but it was edematous. The blood-sugar finding was 0.237 per cent., with no glycosuria. The vesicles healed with atrophy like that following a tuberculid. She has maintained a practically normal blood-sugar content by diet and has had no further skin trouble.

Fig. 9 (Case 25).—Eczema cracquelé.

The patient in Case 67 (Dr. S.) presented a similar skin, though the condition was more chronic—of ten years' duration—very pruritic, and there were many weeping plaques. He was never free from some form of vesicular eruption on the legs. His test showed 0.13 per cent. blood sugar and he was free from all eruptions after a month's diet and two one-fourth skin unit (MacKee) doses of roentgen ray, unfiltered.

The patient in Case 44 (Fig. 8) had an acute vesicular dermatitis of the palms and soles with large, deep, painful vesicles and scaling in

sheets. There was maceration in the webs of the toes. Epidermophyton was found in profusion. His condition was obstinate to various remedies for epidermophytosis. After a blood-sugar finding of 0.2 per cent. he was put on a diet, and his skin became normal in a surprisingly short time. Before dieting he had had fissures in the webs for thirty years, and the acute condition had been present for three weeks. Since dieting he has had no trouble.

The patient in Case 25 (Fig. 9) had a weeping dermatitis involving the skin of the feet, toes (except the sole) and the leg up to the line of the sock, and the dorsum of the left foot; the picture was one of eczema cracquelé. He had been treated for three years by many dermatologists from every section of the United States, with no improvement. When placed on a diet the skin assumed a normal appearance in one month.

TREATMENT

The treatment given the foregoing patients was the ordinary measures to meet the indications. The roentgen ray, following MacKee's fractional dosage plan and local applications, was used with a restricted carbohydrate diet. Improvement was so prompt that we can easily say that therein lay our most effective therapy in most cases.

For two weeks dieting was adhered to rigidly, then various foods were added as the patient could tolerate them. At times carbohydrates were added too fast, and a return of the dermatitis was noticed. Most of the patients after a period varying from one to three months returned to their normal diets, excluding an excess of sweets and starchy foods, with no apparent trouble.

This would lead us to believe that we were dealing with temporary hyperglycemia in such cases. Those who had had trouble for a period of years most probably had a permanent derangement of carbohydrate metabolism. Extensive studies of blood chemistry were made in only a few cases, from which no definite conclusions can be drawn. However, except in a few instances, we felt reasonably sure that we were not dealing with diabetes, but rather with an alimentary hyperglycemia or a prediabetic stage. Insulin treatment has not been extensively used. In one case (Case 49) in which the first sugar reading was 0.139 per cent., in August, 1922, and the last sugar content (May, 1923) was 0.136 per cent., and in which the skin condition did not respond so quickly to diet after a recent recurrence, insulin was given, and the condition cleared up in three days. This one case is not conclusive, but it is suggested that in certain types of dermatoses with hyperglycemia as an etiologic factor insulin may be of great advantage. We intend to follow this out and may be able to report something later.

CONCLUSIONS

In view of the studies on xanthoma by Harrison and Whitfield [12] in which the proportions of cholesterol and sugar were found abnormal, and in view of the fact that the liver plays so great a part in glycogenesis and glycogenolysis, we do not feel that the study of the sugar content of the blood alone will furnish the answer to all questions arising in this study, and future efforts in the study of cholesterol as indicated by Harrison and Whitefield may be of value.

We do not believe that disturbances in carbohydrate metabolism are the sole etiologic factor in these dermatoses, but we do feel that they are very important and that cases fitting in the five groups mentioned should be studied from this standpoint. This conclusion is reached because of the rapid improvement under restricted diet. It is true that other agents ordinarily used, such as the roentgen ray, tar, naphthalan, calamin lotion, etc., were used at the same time; yet the improvement was more rapid with dieting.

We do not limit definitely the rôle of hyperglycemia in dermatitis, but we are satisfied that a consideration of blood-sugar findings made on patients whose dermatoses fit into these six groups will, in the majority of cases, be found helpful in determining an etiology which heretofore has not been duly investigated. When hyperglycemia is found, the clinical improvement observed under dietary measures will warrant the assumption that there is definitely such a thing as "hyperglycemic etiology" of many dermatoses.

In some cases in this series there appeared to be a definite sensitiveness. This is evidenced by recurrences and early recovery on carbohydrate-free diet. It is not believed, however, that this is an anaphylactic reaction (using the term "anaphylactic" in the usually accepted application). This is evidenced by the fact that blood-sugar readings were higher in most instances at each recurrence. It is therefore believed that there is a definite disturbance in carbohydrate metabolism that may be either a diabetic or a prediabetic stage. Further studies with insulin may clear up this point.

In addition to all the heretofore accepted means of reaching a diagnosis, a study of all metabolic processes will probably be a line of investigation demanded in order that dermatology may be able to reach its highest plane of scientific usefulness.

DISCUSSION

DR. D. W. MONTGOMERY, San Francisco: Through clinical experience, not by scientific investigation, I have arrived at Dr. McGlasson's conclusion that

---

12. Harrison, J. A., and Whitfield, A.: The Pathogenesis of Xanthoma, Brit. J. Dermat. & Syph. **35**:81 (March) 1923.

many skin diseases are influenced by an excess of sugar ingested. The problem, however, is intricate. Man ingests starch, sugar and fat, and these supply most of his energy. He needs oxygen to burn them. Modern civilized man is frequently short of oxygen, therefore if he ingests a normal amount of carbohydrate and of fat he may be short on oxygen and develop hyperglycemia. There used to be only one man who shortened his supply of oxygen, the shoemaker. He sat all the time, and consequently did not have sufficient exercise or oxygen. But there are today many sedentary occupations, particularly among women, and these may, even with the normal intake of carbohydrate, develop hyperglycemia. This is only one point in the problem. The intricacies are so many and the difficulties so great that we must formulate some way of getting at the facts when questioning patients. It is a mistake to ask a patient whether he is eating too much sugar, and to rest content with a negative reply. For instance, the patient may be eating a large quantity of fruit which contains much sugar. I saw a young girl with eczema of the neck and shoulders, which no doubt was due to fruit. Dr. McGlasson's patient with intertrigo under the breast had a recurrence of the malady on resuming the use of sugar. Intertrigos are now recognized as being streptodermias, which are likely to occur when too much sugar is eaten. In other instances susceptibility may be acquired by ingesting much milk fat, or sugar and milk fat. In epidermophytosis we often find that patients take much sugar, and on a proper regimen the treatment is comparatively easy, so that there is something more behind the epidermophytosis than the parasite. Dr. McGlasson has given scientific support to the belief based on clinical grounds that I have long held.

Dr. Jeffrey C. Michael, Houston, Texas: The nub of Dr. McGlasson's paper lies in the fact that he has demonstrated the association of hyperglycemia with various eruptive conditions in a large series of cases. Dermatoses associated with diabetes have been known for years, but those connected with hyperglycemia or a prediabetic state are not so well known. I have encountered a number of dermatoses associated with high blood sugar. In one case there was a generalized neurodermatitis; perhaps pruritus with lichenification would be a better term. That case cleared up without any treatment other than proper diet. A few cases of dermatitis of the face and flexures have been associated with hyperglycemia. However, no patient with seborrheic dermatitis has shown high blood sugar.

Dr. L. A. Kennell, San Diego, Calif.: For three years I have been at sea on an oil steamer and conditions there affect the skin a good deal. I have seen some of the conditions that have been mentioned. I was particularly interested in what Dr. McGlasson described as "flexural dermatitis." We see many cases of that condition on board ship, principally among the firing force. The men are working among oil fumes. We see few cases among those who get plenty of sun and oxygen. In regard to the flexural dermatitis, it has been my experience that whenever we go South, or into the tropics, where men are exposed to great heat, which reduces the need for food, they continue to eat a large amount of food; and when at sea where food that contains vitamins and ingredients that ward off skin diseases is not so plentiful, we begin to see more skin disorders. They eat a great deal of fruit, and the excess fruit diet and excess heat seem to bring on many of these conditions, particularly the eczematous condition of the feet. Then when we come into port in San Francisco or San Diego where the bum boats besiege us, the men come in with ice cream and candy and other food, and I can always predict an outbreak of skin dis-

orders. I recently saw a case of scrotal eczema that cleared up by reducing the carbohydrate intake and adding 5 grains (0.32 gm.) of thyroid extract a day.

DR. JESSE ETTLESON, Portland, Ore.: I would like to ask Dr. McGlasson to explain the preparation of the patients before the blood tests were made.

DR. I. L. MCGLASSON: Two or three of the points which have been brought up are covered in the paper. All of the patients are put on a fourteen hour basis; they have supper and come into the office at about 8:30 in the morning. The normal curve would be that within three hours the curve would be back at the normal line, but when hyperglycemia is present, there is a characteristic curve. As to exercise, Dr. Nesbit directed one of the patients to play golf and had no trouble in getting her up to a comfortable tolerance. We have gathered these cases through a period of five years. I was interested to hear that Dr. Kennell has observed the same things that we have, and I am wondering whether the climate may have something to do with it. It may be that we are far enough South for the sweat glands to have something to do with the disorder. In one case this dermatitis occurred on the leg right at the top of the shoe and at the top of the sock.

KERATODERMA PUNCTATUM

S. E. SWEITZER, M.D.
MINNEAPOLIS

Punctate hyperkeratosis of the palms and soles is a rare condition and has received little mention in the literature. Attention is called to it by Ormsby,[1] Sutton,[2] Stelwagon and Gaskill[3] and Macleod[4] in their textbooks.

In the literature, there is described a small group of cases of punctate hyperkeratosis. The condition has received a great variety of names and by some observers has been called a porokeratosis, but as it is uncertain whether the sweat ducts are involved, the term "keratoderma punctatum" seems more appropriate. While the cases of this group are clinically similar in having punctate lesions, a careful study leads one to the conclusion that they are not all identical.

Probably the earliest case of this condition was reported by Davies-Colley[5] in 1879, under the name "disseminated clavus of hands and feet." He described hyperkeratotic lesions on the palms and soles; these lesions were very small and showed pitting, or cupping, in the center.

Besnier[6] saw a case in his clinic and had a model made, which is in the museum of the Hôpital St. Louis. He did not give a clinical description of this case, but the model shows that the whole of the palm was keratotic and covered with punctate lesions. He labeled it "keratodermie erythemateuse symétrique des extremites; formé punctuée."

Hallopeau and Claisse,[7] in 1891, reported a case showing diffuse keratosis with pitting. This may possibly have been a nevus.

Hallopeau,[8] in 1895, reported another case, and in this instance the whole of the palm was keratotic and covered with punctae.

---

1. Ormsby: Diseases of the Skin, Ed. 2, Philadelphia, Lea & Febiger, p. 454.
2. Sutton: Diseases of the Skin, Ed. 4, St. Louis, C. V. Mosby Company, 1921, p. 433.
3. Stelwagon and Gaskill: Diseases of the Skin, Ed. 9, Philadelphia, W. B. Saunders, 1921, p. 551.
4. Macleod: Diseases of the Skin, New York, Paul B. Hoeber, 1921, p. 1062.
5. Davies-Colley: Trans. Path. Soc. London **30**:451, 1879.
6. Besnier: Museum of the St. Louis Hospital, Baretta Model (No. 560, 1892).
7. Hallopeau and Claisse: Ann. de dermat. et syph., 1891, p. 221.
8. Hallopeau: Ann. de dermat. et syph., 1895, p. 480.

Mantoux,[9] in 1903, published a case under the title of "Porokeratose papillomateuse palmaire et plantaire." The patient was a girl, aged 22, and the lesions were of rapid evolution and ran an acute course. They may have been warts, or possibly angiokeratoma. Histologically, they were papillomas with vascular dilatation.

De Beurmann and Gougerot,[10] in 1905, reported a case with diffuse keratosis in which punctae had appeared. No histologic examination was made in this case. This case is somewhat similar to that of Mantoux and had the same title.

Balzer and Germain,[11] in 1905, reported a case in a woman, aged 25, in which the lesions appeared suddenly and ran an acute course. The patient had suffered from some form of skin disease prior to the appearance of the eruption. No histologic examination was made, and in this case also the condition may possibly have been warts.

Balzer and Boye,[12] in 1909, reported a case in a man, aged 66. This was not a pure punctate hyperkeratosis, but a diffuse form with punctae, and, in addition, there was vesiculation when they began.

Buschke and Fischer,[13] in 1910, published a case in the "Ikonographia" and called it "keratodermia maculosa symmetrica palmaris et plantaris." In this case, the patient, a man, aged 40, had noticed the condition for sixteen years. There were no other cases in the family. The palms and soles were both affected, and the lesions were hard, horny nodules without any erythematous halo. Pitting was noticed in many of the older lesions.

Vorner,[14] in 1911, reported a case under the name of "Helodermia simplex et annularis." In this case there was a horny eruption on the palms and backs of the hands, which appeared disseminated. The growth of the eruption was rapid, and it showed an eccentric extension. In the early development of the eruption, it showed some resemblance to the punctate keratoses.

Brauer,[15] in 1913, reported a case under the name "keratoma dissipatum hereditarium palmare et plantare." There were disseminated, horny papules on the palms and soles; the condition seemed hereditary, appearing in three brothers and their sons. There were some large flat areas of hyperkeratosis and also numerous punctate lesions.

---

9. Mantoux: Ann. de dermat. et syph., 1903, p. 15.
10. De Beurmann and Gougerot: Ann. de dermat. et syph., 1905, p. 629.
11. Balzer and Germain: Ann. de dermat. et syph., 1905, p. 633.
12. Balzer and Boye: Bull. Soc. franç. de dermat. et syph., 1909, p. 9.
13. Buschke and Fischer: Ikonographia Dermatologica. (Neisser and Jacobi), 1910, p. 183.
14. Vorner: Arch. f. Dermat. u. Syph., 1911, p. 161.
15. Brauer: Arch. f. Dermat. u. Syph., 1913, p. 211.

Chalmers and Kamar [16] reported a case in 1917, and they suggested the name of "keratodermia punctata" for the condition. Their patient was a Soudanese woman, and the palms and palmar surfaces of the fingers were involved, showing numerous tiny craters. The condition was an acquired one, and developed in eight or nine months. The feet were not involved.

The lesions appeared as a circular, heaped-up rings around a sweat orifice. Many exuded fluid at the apex and formed a central crust, which came away and left a cavity. The exudation present at the beginning shows that this case cannot be considered as similar to the ones lasting for years and showing no evidence of fluid.

Matsumoto [17] reported a case in 1918, calling it "a new form of punctiform keratodermia." The patient was a girl, aged 19, and the palms showed a few, small punctate, hyperkeratotic lesions. There was no central pitting and no evidences of a hereditary tendency. The soles were not involved. The section showed a hyperkeratosis.

Galloway,[18] in 1918, reported two cases occurring in cousins. He called the condition "punctate keratosis of the palms of the hands and soles of the feet." Large numbers of yellowish brown, rather flat nodules could be seen, in size varying from that of a minute point tc that of a millet seed. They were disseminated over the whole palm to the crease of the wrist and spread along the fingers. These nodules seemed to be papules of firm, horny epithelium. They were not vesicular. In process of time, they flattened, and at length became depressed below the surface. Many of them showed definite pitting of their summits or centers. A similar condition appeared on the soles. It was a family complaint.

Galewsky,[19] in 1922, under the title "Ueber Keratodermia Maculosa Disseminata Symmetrica Palmaris" reported a case in a man aged 70. He was first seen in 1911, and at that time had about 100 small nodules on the palm. They were round and oblong and polygonal, some with pitting in the center. They were yellowish white, and the palm showed no diffuse hyperkeratosis and no dilated sweat ducts. Only the palms were involved, and heredity played no part in the condition.

In 1919, Galewsky saw the patient again, and found that gradually a diffuse thickening had taken place over the entire palm, with some cornlike areas. The skin was thickened to the finger tips, and the hyperkeratosis was sharply defined with no signs of redness. On the feet, there was a heavy hyperkeratosis over the pressure areas.

---

16. Chalmers and Kamar: J. Trop. M. **20**:121, 1917.
17. Matsumoto: J. Cutan. Dis. **36**:280, 1918.
18. Galloway: Brit. J. Dermat. & Syph. **30**:123, 1918.
19. Galewsky: Arch. f. Dermat. u. Syph. **138**:445 (April 15) 1922.

Galewsky reviewed the literature and advanced the possibility that all these conditions were different forms and stages of the same disease. Apparently, no histologic study was made.

Braun,[20] in 1922, under the title, "Ein Beitrag zum Keratoma Palmare et Plantare Hereditarium," described three cases similar to those of Brauer and Buschke and Fischer. A man and his three daughters had numerous punctate, hard, horny lesions on the palms and soles. The man and two daughters were observed. The histologic findings

1.—Small punctae on palm.

agreed with those of Brauer and Buschke and Fischer. The man's father also had the disease.

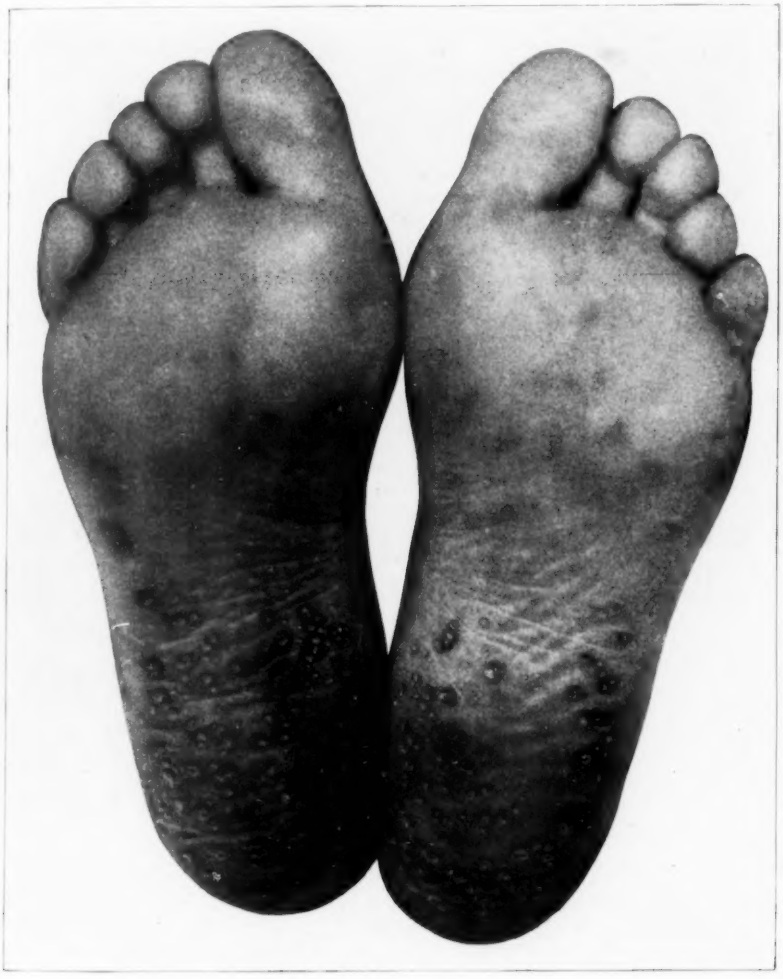
Lieberthal [21] recently presented a case to the Chicago Dermatological Society, which he classed as keratosis punctata. The patient, a man, aged 44, had an affection of the left palm which had been present for eight years. The palm was diffusely keratotic and showed depressions with horny plugs. The fingers and sides of the palm were erythematous, with a faint indication of keratosis. The soles and the other

20. Braun: Arch. f. Dermat. u. Syph. **139**:201 (March) 1922.

21. Lieberthal: Keratosis Punctata, Arch. Dermat. & Syph. **7**:127 (Jan.) 1923.

palm were not involved; this was not a punctate keratosis, but the diffuse form with punctae.

Oppenheim [22] presented a case before the Vienna Dermatological Society under the name of "keratodermia symmetrica papulosa palmaris et plantaris." The patient, a woman, aged 30, was of the anemic type,



2.—Numerous punctae on soles.

who had not menstruated for the past seven months. She had recurring urticaria and stigmas of hysteria. On the palms and soles were pinhead to linseed sized, pitted, yellowish, hard papules, which one could feel better than see. Some disappeared and new ones appeared

22. Oppenheim: Dermat. Wchnschr., Nov. 11, 1922, p. 1115.

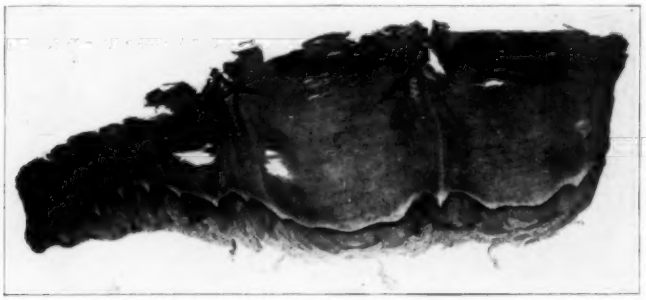
during the time she was under observation. Pitting was the rule after the appearance of new lesions.

In the discussion which followed, Artz reported that he had seen a case in which the condition was familial. Riehl had seen a case in which the eruption first appeared at the age of 10 years.

The following case of keratoderma punctatum was first seen in April, 1922, at the Minneapolis General Hospital.

REPORT OF A CASE

The patient was a well-developed woman, aged 33, who said that the condition on the palms and soles had started in early childhood, and that her father and one brother were similarly afflicted. She had acquired syphilis ten years before and had started treatment two years before, receiving about fifty injections of neo-arsphenamin and some mercury. Arsenic as a causal factor of the skin condition was considered, but it was ruled out as the condition had been present since childhood and was not influenced in any way by the antisyphilitic treatment.



3.—Extreme hyperkeratosis with sweat ducts. Hematoxylin and eosin staining; low power magnification.

The skin over the general body surface was normal, only the palms and soles being involved. The skin of the palms was soft and flexible, except for the presence of many small, hard, horny papular lesions. The lesions were light yellow, and some showed slight pitting. The lesions were present over the thenar eminence and also over the palm and palmar surfaces of all the fingers. They were quite small in size, varying from 1 to 3 mm. in diameter. Their appearance corresponded closely to the picture of Buschke and Fischer's case in the "Ikonographia," and comparison with it aided in making a diagnosis.

The soles showed a few scattered lesions on the big toe and ball of the foot. The arch of the foot was comparatively free, except toward the heel, which was studded with small, horny yellowish lesions, most of them showing a central depression. These lesions extended up the back of the heel for about 1½ inches (3.81 c.c.). They varied in size from about 2 to 5 mm., being larger than those on the palm.

There was no diffuse hyperkeratosis on the feet and no signs of erythema either on the palms or soles. The lesions on certain areas caused pain from the pressure of the shoe, and the patient would cut them off with a knife.

Histologic Examination.—For the purpose of microscopic study, an entire punctate lesion was excised from the sole with a biopsy punch. The tissue was hardened in formaldehyd and alcohol, embedded in paraffin, and was sectioned with great difficulty because of the hardness of the tissue. It was stained with hemotoxylin and eosin.

The chief changes noted were in the horny layer. This layer was greatly thickened in a circumscribed manner. There was no change in its structure. The stratum lucidum was clearly noted. The sweat ducts, although lengthened because of the thickened layers that they must traverse, were not changed in structure. The plug-like thickening of the horny layers caused a pushing-down against the corium. The granular layer was not altered to any great extent. The horny plug caused, because of the pressure, bending of the rete pegs, which were decidedly elongated in the central portion of the lesion. The basal layer was intact, and there was no inflammatory infiltrate in the corium.

Diagnosis was clearly that of a punctate keratosis.

DIAGNOSIS

In making a diagnosis of this condition, we must consider clavus, psoriasis, porokeratosis Mibelli and angiokeratoma. Galloway [18] states that a punctate keratosis of the palms and soles may occur in lichen planus, arsenical keratosis, syphilis, keratosis follicularis and linear nevus and in association with verrucae planae. All these must be considered as possibilities in making a diagnosis, as well as the generalized keratodermas with punctae.

The true keratoderma punctatum should not show a generalized hyperkeratosis or any erythema at the edges of the lesions.

COMMENT

This condition is rare, and I have been able to find the records of only eighteen cases. All of these conditions are not identical. Many have been reported as porokeratosis. Some have certainly been small plantar warts and others lichen planus. Some showed a diffuse keratosis with punctae.

The case of Davies-Colley, Buschke and Fischer, Brauer, Matsumoto, Galloway, Braun, Oppenheim and the present case seem to fall into a small group, showing great similarity both clinically and histologically. Of this small group, many also showed an hereditary tendency.

625 Syndicate Building.

DISCUSSION

Dr. William Allen Pusey, Chicago: I have nothing to say except that I think Dr. Sweitzer has done well to call the matter to our attention and emphasize it. The history in these rare dermatoses is that we all see them at long intervals and they get by us until somebody crystalizes our knowledge on the subject by a good paper, and then we begin to recognize the cases. Dr. Sweitzer has done this, and I think it is a good service.

Dr. E. L. McEwen, Chicago: I would like to ask whether Dr. Sweitzer found any tangible evidence of an endocrine imbalance.

Dr. David Lieberthal, Chicago: The case which Dr. Sweitzer cited as demonstrated before the Chicago Dermatological Society was exhibited without much study because the patient was seen by me for the first time about twenty-four hours before presentation.

Keratoderma punctatum, so well described by Dr. Sweitzer, is a congenital condition and develops symmetrically on both palms, whereas in my case the disease was acquired and affected one palm only. The clinical picture of it was almost similar to that of keratoderma punctatum, but the microscopic examination could not be made for the reason stated.

Dr. J. M. H. MacLeod, London, England: About the condition Dr. Sweitzer has so graphically described, the view I have come to personally in sifting out these cases is that they are not all the same thing. The Galloway type of case was not affected much by treatment. The best description I know of, before we heard this one today, was made by Chalmers. He has worked out a large textbook on tropical diseases, and he worked out this disease and described it very fully.

I believe that punctate keratoderma that leaves pits is hereditary. I am not certain from the sections I have seen what part of the skin it arises from. It is difficult to determine that without making serial sections, but my impression is that it is a follicular condition. I am inclined to regard it as congenital, but whether it has a right to be called porokeratosis depends on whether someone definitely establishes a connection with the sweat glands.

Dr. Samuel E. Sweitzer, Minneapolis: The question of arsenic must be considered in making a diagnosis of this condition. Ordinarily it seems to me it would be quite easy to bar out the arsenical keratoses for the reason that they are more irregular and more likely to be diffuse than this form in which the skin is thin between the individual lesions.

Replying to Dr. McEwen, there was no endocrine imbalance in this case. It was hereditary. The patient's father and two brothers had it, and it closely resembled the cases described by Galloway. I also had the pleasure of reading the paper of Dr. Chalmers mentioned by Dr. MacLeod. It was an excellent paper, but in that case there was exudation. I tried to bring out that there was a small group of cases described in the literature without any exudation and in most instances hereditary.

A CONTRIBUTION TO THE STUDY OF XANTHOMA TUBEROSUM, WITH REPORT OF A CASE

B. BARKER BEESON, M.D.

Associate Professor and Acting-Director of Division of Dermatology and Syphilology, Loyola University, School of Medicine; Chief of Department of Skin and Venereal Diseases, House of Correction

AND

P. G. ALBRECHT, B.S., PH.D.

Associate in Physiological Chemistry, College of Medicine, University of Illinois

CHICAGO

It is our intention to review briefly the literature, with particular emphasis on the newer findings in cases of xanthoma tuberosum, ending with a description of what was found in the study of a classical example of this curious disorder.

The earlier observations were largely clinical, Carry,[1] Brachet and Monnard[2] and Besnier[3] being among the pioneer students of xanthoma. Later, Poensgen,[4] Koebner[5] and others reported similar cases. Originally, these curious growths were regarded as fatty; but in 1893-1894, Török,[6] after a careful study, came to the conclusion that they were not composed of true fat. His theory was subsequently confirmed by Stoerk[7] and Pringsheim,[8] who stated that the substance in question was really a lipoid.

Quinquaud,[9] in 1874, was the first dermatologist to study such cases from the cholesterol standpoint. We were unable to obtain his original article but found his researches quoted by Chambard.

---

1. Carry: Contribution a l'étude du xanthoma, Ann. de dermat. et syph. **1**:64-82, 1880.

2. Brachet and Monnard: Observation d'un cas de xanthome en tumeurs, Ann. de dermat. et syph. **2**:658-662, 1881.

3. Besnier and Doyon: Trad. de Kaposi, Ed. 2, **2**:321, 1891.

4. Poensgen: Mitteilung eines seltenen Falles von Xanthelasma multiplex, Virchow's Arch. f. path. Anat. **91**:350-370, 1883.

5. Koebner: Xanthoma multiplex entwickelt aus Naevis vasculoso pigmentosis, Vrtljschr. f. dermat. u. syph. **3**:412, 1888.

6. Török: De la nature des xanthomes, avec quelques remarques critiques sur la notion des tumeurs, Ann. de dermat. et syph. **4**:1109, 1893; 1261, 1894; **5**:50.

7. Stoerk: Ueber Protargon und die grosse weisse Niere, Sitzungsb. d. Akad. d. Wiss. in Wien. **115**:31-100, 1906.

8. Pringsheim: Darstellung und chemische Beschaffenheit der Xanthomsubstanz, Deutsch. med. Wchnschr. **12**:2145, 1908.

9. Quinquaud, quoted by Chambard: Du xanthélasma et de la diathèse xanthélasmique, Ann. de dermat. et. syph. **10**:393-395, 1879-1880.

Pinkus and L. Pick [10] presented their first case of this type before the Berlin Dermatological Society in 1908. It was a typical tuberous xanthoma. The patient subsequently died of Hanot's cirrhosis. Necropsy revealed xanthomatous involvement of the dura mater. Pinkus and Pick found cholesterol in some of the skin tumors, and they stated that it is normally found in the suprarenals, corpus luteum and thymus. Pathologically, they had found it in plaques of arteriosclerosis, bronchial epithelium, in kidney tissue of certain nephritides, and in other conditions. They later reported several additional examples [11] and expressed the opinion that the lesions of this disorder are not the result of a true tumor formation but are in reality due to an infiltrative process. Besides finding cholesterol or cholesterin in the xanthoma cells as refractile sudanophilic droplets, they also noted that it was found lying free in the surrounding tissues.

Chauffard [12] and his pupils, Grigaut and Laroche,[13] have also done much to show that a relationship exists between xanthoma of this type and hypercholesterinemia. They believe that cholesterol is normally present in the blood serum in a proportion which varies from 0.12 to 0.18 gm. per 100 c.c. of blood (hereafter when referring to the amount of cholesterol present in a given case it is understood that it is the amount present in 100 c.c. of blood unless otherwise stated). Grigaut's method [14] was employed in arriving at these figures. According to the doctrine of these authors only a small part of the cholesterol is derived from ingested food; the major portion results from the internal secretion of different tissues and organs, among which the suprarenal glands and ovaries play a leading part. Chauffard also claims that in addition to a hypercholesterinemia of alimentary origin, there are two additional varieties: one of which is of hepatic origin and a passive type in his estimation, and an active type which is of endocrine origin. The first one is due to disturbed liver function and results in biliary retention, while the other originates from the ovaries and suprarenal glands. The xanthomas, biliary calculi and xanthelasma

10. Pinkus: Ueber Xanthome und Schaumzellentumoren mit Bericht eines von generalisierten Xanthoma tuberosum, Dermat. Ztschr. **15**:706-714, 1908. Berl. Dermat. Gesellsch., May 12, 1908. Discussed by L. Pick.

11. Pinkus und Pick: Zur Struktur und Genese der symptomatischen Xanthome, Deutsch. med. Wchnschr. **34**:1426-1430, 1908. Weitere Mitteilung zur Lehre von den Xanthome, Arch. f. Dermat. u. Syph. **49**:465-466, 1910.

12. Chauffard: Les depôt locaux de cholestérine et leurs rapports avec la cholestérinemie, Revue de méd. **31**:176-194, 1911.

13. Chauffard and Laroche: Pathogénie du xanthélasma, Semaine méd. **30**: 241-244, 1910. Chauffard, Laroche and Grigaut: Cholestérinémie, Ann. méd. **8**: 69 and 149, 1920.

14. Grigaut: Procédé colorimetrique de dosage de la cholestérine dans l'organisme, Compt. rend. Soc. de biol. Paris **68**:791-793, 1910.

belong to the first or passive type, while aortic atheromas, the arcus senilis and white patches of albuminuric retinitis correspond to the endocrine variety. Chauffard has found 6 gm. of cholesterol per liter of blood in cases of xanthoma tuberosum, while 1.9 gm. was the maximum amount of that same substance found in examples of xanthelasma. One of his patients is of interest as showing the influence of trauma in the production of xanthoma. In this case a considerable number of hypodermic injections of sodium cacodylate had been given. A xanthoma subsequently appeared at the site of each injection. Chauffard also says, "Thus one can affirm that the lesions of xanthelasma and xanthoma are not of a neoplastic or degenerative nature. They should be considered as analogous to gouty tophi, and termed cholesterinic skin tophi."

As to treatment, Chauffard recommends a diet composed of roasted and grilled meats, green vegetables, skimmed milk and very little sugar. This regimen was of service in the case reported by Thibierge and Weissenbach.[15]

Aschoff[16] and certain of his pupils, Sternberg,[17] Loewenthal,[18] Rothschild,[19] Landau and McNee,[20] after extensive animal experimentation, do not agree with the theory of Chauffard and his school. According to them, the major portion of the cholesterol is ingested with the food. Such organs as the suprarenals and the sexual glands may store up cholesterol, but they are not capable of producing it. The ingested cholesterol passes into the bowel and afterward reaches the liver, from whence, under normal conditions, it is excreted in the bile. At times an interference with the "liver filter" results in a damming back of the cholesterol in the blood and its deposition in certain organs, such as the suprarenals, testicles and fatty deposits.

---

15. Thibierge and Weissenbach: Xanthome tubéreux disséminé et généralisé avec hypercholestérinémie considérable, Bull. et mém. Soc. méd. d. hôp. de Paris **31**:393-398, 1911.

16. Aschoff: Zur Frage der Cholesterinesterverfettung beim Menschen, Festschrift f. Unna **21**:23-40, 1910.

17. Sternberg, (H.): Die Nebernniere bei physiologische (Schwangerschaft) und artifiziellen Hyperscholesterinämie, Ziegler's Beitr. **60**:91-123, 1914-1915.

18. Loewenthal, K.: Zur physiologie des Cholesterinstoffwechsels, Beziehungen zwischen Hoden und Cholesterinstoffwechsel, Ziegler's Beitr. **61**:564-569, 1915-1916.

19. Rothschild, M. A.: Zur Physiologie des Cholesterinstoffwechsels. III. Die Bezienhungen der Nebenniere zum Cholesterinstoffwechsels, Ziegler's Beitr. **60**:39-65, 1914.

20. Landau and McNee: Zur Physiologie des Cholesterinstoffwechsels, Ziegler's Beitr. **58**:667-693, 1914.

Erich Schmidt [21] in a study of four cases, two of them typical xanthomes en tumeurs, found that the blood cholesterol content varied from 0.259 to 0.572 per cent., the higher percentages being obtained in the more exaggerated cases. In making his cholesterol estimations, Schmidt invariably removed the blood two hours after breakfast. He did this because of Hürthle's experiments with dogs [22] which showed an increased blood cholesterol content when the blood to be examined was removed during a hunger period. In this way if the cholesterol percentage varied from 0.20 to 0.22 in blood taken during hunger, it

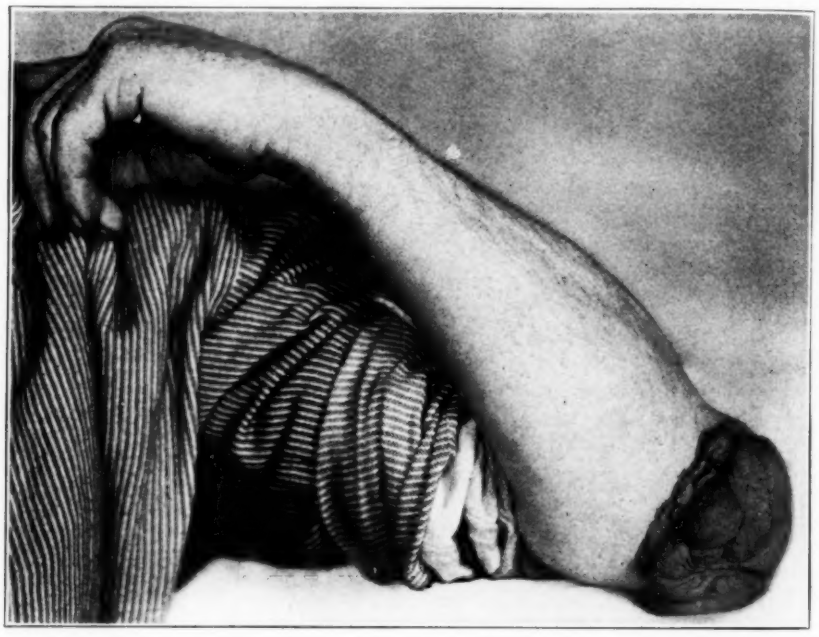


Fig. 1.—Mass over left elbow and enlarged thumb.

would vary from 0.12 to 0.18 per cent. if the blood was taken soon after feeding.

Schmidt [23] has recently made another contribution to this subject based on a study of five cases, all the patients being members of the same family. In Case 1, the mother showed a maximum cholesterol content of 0.788 per cent. which fell to 0.190 per cent. during men-

21. Schmidt, Erich: Ueber die Bedeutung des Cholesterins für die Xanthombildung. Dermat. Ztschr. **21**:137-150, 1914.

22. Hürthle, K.: Ueber die Fettsäure Cholesterinester des Blutserums, Ztschr. f. Physiol. Chem., Strassburg **21**:331-359, 1895-1896.

23. Schmidt: Beiträge zur Xanthomfrage, Arch. f. Dermat. u. Syph. **140**: Orig. 408-428, 1922.

struation. On two occasions it attained 0.702 and 0.684 per cent. within one week after the menstrual flow had ceased. In all of his cases Schmidt employed the colorimetric method of Autenrieth and Funk [24] in estimating the blood cholesterol content. In his other cases, three of them typical xanthomes en tumeurs, the patients showed cholesterol percentages which varied from 0.402 to 0.590. In the fourth case, a boy who had a small xanthoma near each inner canthus showed only 0.168 per cent. of cholesterol. Schmidt and Chauffard also have examined xanthomatous tumors by means of Liebermann's reaction, which was strongly positive in such instances. Removal of these tumors did not bring about a decrease in cholesterol in the blood. Schmidt found no evidence of diabetes or icterus in his patients. He believed that the tumors are due to a cholesterol infiltration of the cutis, particularly over such sites of trauma as the elbows and knees.

Arning and Lippmann [25] in a recent article have given a painstaking summary of a case seen at St. George's Hospital, Hamburg. The patient, a man 34 years of age, presented a number of tumor-like xanthomas. There was no evidence of diabetes or disturbed liver function. The skin lesions appeared at the age of 8 years. A weakened heart action was found. The patient exhibited a well developed arcus senilis. Two blood examinations for cholesterol according to Bloor's method gave 0.750 and 0.789 per cent., respectively. Arning and Lippmann set the normal cholesterol blood content at from 0.14 to 0.16 per cent. They quote Autenrieth and Funk as finding 0.550 and 0.580 per cent. in such cases. Arning and his co-worker believed that perhaps the weak cardiac action in this case was due to xanthomatous involvement of the heart muscle tendon sheaths. They regard the xanthomatous lesions as a secondary deposit of cholesterol in such tissues as the mesoderm, periosteum and tendon sheaths which seem to have a special affinity for it. Cases of xanthoma which cannot be shown to bear a relationship to diabetes or some hepatic disturbance they term "essential."

Arning [26] has also studied a Mecklenburg family in which the mother and five out of nine sisters exhibited xanthoma. Of the children, three died at the ages of 16, 21 and 26 years, respectively, while in apparently good health. In two of them death was due to heart failure while dancing.

---

24. Autenrieth and Funk: Ueber Kolorimetrische Bestimmungsmethoden; die Bestimmung des Gesamtcholesterins im Blut und in Organen, München. med. Wschnschr. **60**: 1243-1248, 1913.

25. Arning and Lippmann: Essentielle Cholesterinämie mit Xanthombildung, Ztschr. f. klin. med. **89-90**: 107-109, 1920-1921.

26. Arning: Ein Fall von familiärer Xanthomatose, Arch. f. Dermat. u. Syph. **105**: Orig. 290, 1910.

De Gamrat [27] has observed a case of tumor-like xanthoma in a diabetic patient whose urine showed 4 per cent. of sugar as well as a considerable amount of bile and a trace of acetone. The blood cholesterol content was 0.38 per cent. There was no arcus senilis nor any xanthomatous involvement of the eyelids and adjacent skin. Strict dietetic measures kept the urine sugar-free for six months, but the tumors did not show even the slightest sign of regression. De Gamrat believes that this effectually refutes the belief that an appropriate regimen will exert an influence on such skin lesions in diabetes.

Pulvermacher [28] is of the opinion that the cholesterin infiltration occurs in preformed tissue, as in his case in which fibromas under-

Fig. 2.—Growths about knees.

went conversion into xanthomas. He thus takes the same stand as Pinkus and Pick and terms these growths "fibromata xanthomatosa." Arning, Blaschko and de Gamrat disagree with this theory.

Arning has compared the affinity of the dense connective tissue about the joints for the cholesterol and its esters to the affinity of the synoviae for the uric acid excretory products in gout. Roentgen-ray plates in his cases of xanthoma have not shown any bone changes in

27. De Gamrat: Un cas de xanthomes multiplex dits "en tumeurs" avec diabète concomitant, Ann. de dermat. et syph. **1**:497-506, 1920.

28. Pulvermacher, L.: Multiples Xanthom in Geschwulstform (Fibromata Xanthomatosa), Berl. Dermat. Gesellsch., Dec. 5, 1916; Dermat. Ztschr. **24**: 234-237, 1917.

contradistinction to gout. He believes, moreover, that a hypercholesterinemia may be present for years without leading to tumor formation.

Lubarsch [29] has advanced the hypothesis that the xanthomatous tumors are likely to occur where the blood, rich in cholesterol, is dammed up and thus caused to flow more slowly. Arning tried this out by using Bier's hyperemia about a xanthoma for two weeks, but with no apparent effect on it. Thorough massage for a like period as well as antisyphilitic therapy also proved entirely futile.

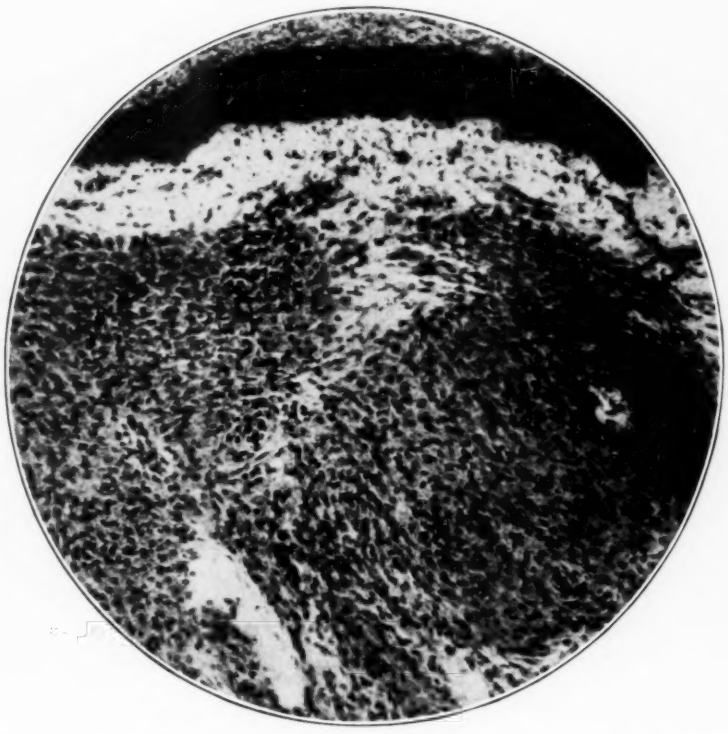


Fig. 3.—The zone between the epidermis and xanthomatous infiltration.

Burns [30] has reported a case in which there was a hypercholesterinemia attaining 660 mg. on a normal diet and 990 mg.. on a high fat diet, his estimations being carried out according to the method of Bloor. The blood was removed fourteen hours after eating. His patient also showed signs of endocarditis of the mitral and aortic

29. Lubarsch: Generalisierte Xanthomatose bei Diabetes, Deutsch. med. Wchnschr. **44**:484, 1918.

30. Burns: A Contribution to the Study of the Etiology of Xanthoma Multiplex, Arch. Dermat. & Syph. **2**:415, 429 (Oct.) 1920.

valves. Roentgenograms of the hands and feet showed gouty lesions. Hard masses present over the shins and malleoli were probably xanthomatous.

Mook and Weiss [31] have very recently studied three instances of xanthoma tuberosum, in all of which there was a hypercholesterinemia, the highest being 555 mg., and the lowest 270 mg.

Harrison and Whitfield [32] have described a case of xanthoma with an increased blood cholesterol content and a probable pancreatic lesion.

Merrill [33] has given an account of the roentgen-ray findings in a case of xanthoma with hypercholesterinemia. "In the soft tissues were many nodular enlargements. Underlying several of these superficial lesions was seen a definite abnormality of bone characterized by destruction which in some of the smaller bones was of cystic nature, in larger bones showed irregular surface destruction with partially outlined margins, most noticeable in the phalanges, metatarsals, lower end of fibulae and ulnae."

Cases showing no increase in blood cholesterol have been reported by Arzt,[34] Rosenbloom [35] and Siemens.[36] Arzt's case was an unusual one which he termed "xanthoma areolare multiplex," a name originally employed by Riehl. Arzt and Rosenbloom used the method of Windaus in making their cholesterol estimations.

Cases of more than usual interest from the clinical standpoint have been observed by Pusey and Johnstone,[37] Sutton,[38] Winfield,[39] R. Cranston Low [40] and MacLeod.[41] The patient reported by Pusey and

---

31. Mook and Weiss: Xanthoma and Hypercholesterinemia, Arch. Dermat. & Syph. **8**:19-30 (July) 1925.

32. Harrison, G. A., and Whitfield, A.: The Pathogenesis of Xanthomatosis with Report of a Case, Brit. J. Dermat. **35**:81-92, 1923.

33. Merrill: Case of Xanthoma Showing Multiple Bone Lesions, Am. J. Roentgenol. **8**:480, 1920.

34. Arzt: Beiträge zur Xanthom (Xanthomatosis) Frage, Arch. f. Dermat. u. Syph., Orig. **126**:809-946, 1918-1919.

35. Rosenbloom, J.: The Cholesterol and Cholesterol-Ester Content of the Blood in Xanthoma Tuberosum Multiplex, Arch. Int. Med. **12**:395-398 (Oct.) 1913.

36. Siemens: Ueber ungewöhnlich ausgebreitete Xanthomatose ohne Hypercholesterinämie, Arch. f. Dermat. u. Syph. **138**:431-433, 1922.

37. Pusey and Johnstone: A Case of Xanthoma Diabeticorum and Lipoma Multiplex and a Case of Xanthoma Approaching the Diabetic Type with Diabetes Insipidus, J. Cutan. Dis. **26**:552-562, 1908.

38. Sutton: Xanthoma Tuberosum Multiplex Mistaken for Myomatosis Cutis Disseminata J. A. M. A. **59**:178-180 (July 20) 1912.

39. Winfield: A Case of Xanthoma Multiplex, J. Cutan. Dis. **27**:112-116, 1909.

40. Low, R. Cranston: Xanthoma Tuberosum Multiplex with Lesions in the Heart and Tendon Sheaths, Brit. J. Dermat. **22**:109-118, 1910.

41. MacLeod: A Case of Xanthoma Tuberosum Multiplex with Tumors About the Joints, Brit. J. Dermat. **25**: 1913.

Johnstone had in addition to cutaneous xanthoma, corneal involvement and similar lesions in the larynx which necessitated intubation. Sutton's case simulated myomatosis cutis and Winfield's bore a striking resemblance to urticaria pigmentosa. Richter [42] has described an extensive example of xanthome en tumeurs in a nine months old child. Various treatments, such as ichthyol-collodion, shaving plus ichthyol compresses, the injection of a drop of pure ichthyol into each tumor and Unna's mikrobrenner were all tried, the last one giving the best results.

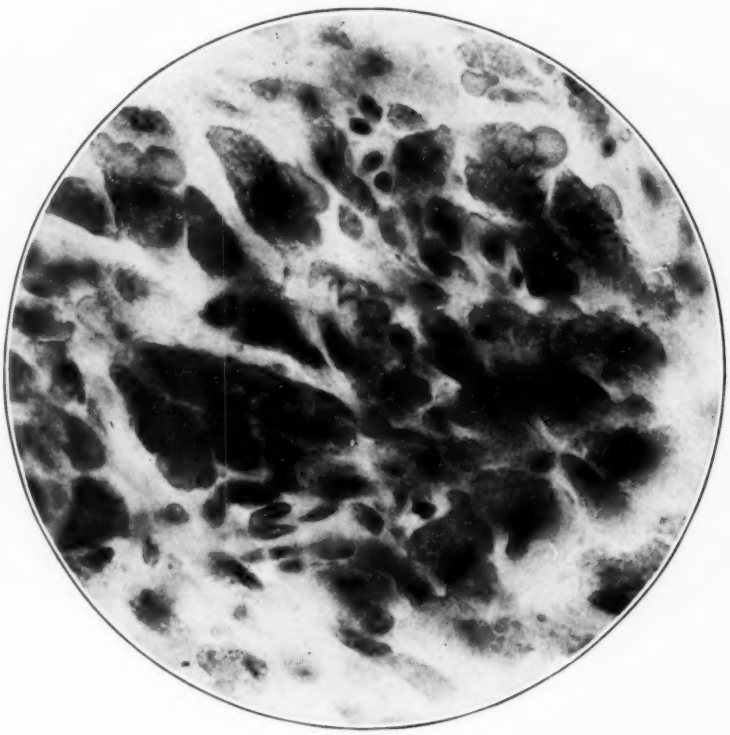


Fig. 4.—A cluster of xanthoma cells.

The cases described by Lehzen and Knauss [43] and Pavy and Fagge both showed xanthomatous involvement of the cardiovascular system at necropsy. In the first instance, a girl, aged 11, had a mitral systolic murmur. The postmortem examination revealed xanthomatous patches involving the mitral valve and the aorta. This patient also presented skin and tendon sheath lesions. Pavy and Fagge's patient had a mitral

42. Richter: Ueber generalisierte Xanthome, besonders das Xanthome en tumeurs, Monatschr. f. prakt. Dermat. **36**:57 and 126, 1903.

43. Lehzen and Knauss: Ueber Xanthoma multiplex, planum, tuberosum, mollusciforme, Virchow's Arch. f. path. Anat. **116**:85-104, 1889.

murmur together with skin and tendon sheath involvement. Necropsy disclosed xanthomatous plaques affecting the aorta, pulmonary, innominate and carotid arteries as well as the left auricle. Freeman [44] has lately given the necropsy report of a case of xanthoma tuberosum. The patient, a boy, had numerous yellowish nodes over the trunk and limbs, plus extreme jaundice, a large hard liver, multiple skull defects and diabetes insipidus. The blood cholesterol content was 400 mg. Xanthoma cells were found in the lungs, liver and brain. The heart, spleen and kidneys showed no important lesions.

Knowles and Fisher [45] have reviewed the reported cases in children along with tendon sheath and visceral involvement, adding a personal case to the list.

Chvostek [46] has reviewed the incidence of jaundice in xanthoma and reported such a case associated with hypercholesterinemia.

Anitschkow,[47] as a result of experimental work with rabbits, has demonstrated that when they are given large amounts of cholesterol a heaping up of anisotrophic fatty droplets occurs in the macrophages of the connective tissue, which cells were thus transformed into typical xanthoma cells. When, in addition to feeding rabbits with cholesterol, artificial setons consisting of bits of aseptic cork soaked in turpentine were embedded in the skin, a piling up of connective tissue macrophages occurred, these being likewise converted into xanthoma cells. Such a process, according to Anitschkow, is parallel to xanthoma in man, both morphologically and pathogenically. When rabbits which are not fed with cholesterol are subjected to aseptic irritation by placing bits of turpentine impregnated cork under the skin, an infiltrate of macrophages occurs, and such cells become filled with fat. This is, however, a neutral fat and not cholesterin. Such a process is transitory and does not lead to the formation of typical xanthoma

44. Freeman: Necropsy Findings in a Case of Xanthoma Tuberosum Previously Reported, Philadelphia Dermat. Soc., Feb. 12, 1923; Arch. Dermat. & Syph. **7**:853 (June) 1923.

45. Knowles and Fisher: Xanthoma Tuberosum Multiplex in Children, with Visceral and Tendon Sheath Involvement, Trans. A. M. A., Sec. on Dermat. 1923, p. 138-143.

46. Chvostek: Xanthelasma und Ikterus, Ztschr. f. klin. med. **73**:479-558, 1911.

47. Anitschkow: Ueber experimentall erzeugte Ablagerungen von Cholesterinestern und Anhaufungen von Xanthomzellen im subkutanen Bindegewebe des Kaninchens, München. med. Wchnschr. **60**:2555-2558, 1913. Ueber experimentell erzeugte Ablagerungen von Anisotropen Lipoidsubstanzen in der Milz und in Knochenmark, Ziegler's Beitr. **57**:201-222, 1913-1914. Experimentelle Untersuchungen ueber die Ablagerung von Cholesterinfetten im subkutanen Bindegewebe, Arch. f. Dermat. u. Syph., Orig. **120**:627-674, 1914.

cells. Maximow has shown that these neutral fatty cells are common among the pus phagocytes and are morphologically pseudoxanthoma cells. Anitschkow has found that certain interstitial cells of some of the inner organs possess this property of taking up cholesterol and becoming metamorphosed into xanthoma cells. Among them he mentions the reticulo-endothelial cells of the spleen, the lymph glands and the spinal cord, as well as the Kupffer star cells of the liver. A close relationship exists between these cells and the connective tissue macrophages.

Fig. 5.—Blood vessel with perivascular infiltrate largely composed of round cells. In the upper right-hand corner are two xanthoma cells lying against the vessel wall. To the right is a sharply defined xanthomatous nodule. On the left is an obliterated blood vessel.

REPORT OF A CASE

History.—A man, aged 34, of Jewish extraction, a teamster, seen on the service of one of us at the House of Correction, Chicago, had always felt well except for dyspnea after climbing stairs, having noticed this for some time. The skin tumors had been present ever since he could remember. Most of them had been removed surgically but had invariably recurred. His father had died of heart disease twenty-four years ago, without showing any such lesions. The mother was alive and enjoying fair health. She exhibited small

yellowish patches on both upper lids, but none elsewhere. Two brothers presented skin lesions which were similar to those of the patient, but they were not so numerous or so well developed. One brother, aged 24, had yellowish growths below the eyes, on the hands, knees, elbows and buttocks. Another brother, aged 32, had similar tumors below both eyes, over the knees and on the right hand. In neither of them had there been any resort to surgery. Two other brothers and two sisters had no skin lesions. No member of the family had ever had jaundice or diabetes.

Examination.—Below each inner canthus the patient presented a pea-sized, yellowish, firm mass. The eyelids and face were free. There was no arcus senilis. On the outer and upper aspect of the left arm was a large saffron-colored plaque marking the site of a postoperative recurrence. A large lobulated and pedunculated mass was present over the extensor surface of each elbow, the tumor over the left elbow being composed of eight large and several smaller growths, the former being the size of a hen's egg. As was the case with all of the tumors except those involving the Achilles tendons, they were soft in consistency. The mass over the right elbow consisted of four large tumors. Just below were two similar lesions. All of these as well as the remainder, except the Achilles' tendon lesions, were saffron colored, tinged with blue, particularly the elbow and knee growths. None of these tumors gave rise to any subjective symptoms. A small growth was found on the knuckle of the left second finger. The left thumb was enormous, measuring over 4 inches (10.16 cm.) in circumference. It began to enlarge slowly after a bruise about seven years ago. A pea-sized nodule was located on the right thumb, and a similar lesion was observed on the flexor aspect of the right wrist. A flattened placard, measuring 5½ by 5½ inches (13.9 cm.) was present over the front of the left knee. A similar but slightly smaller plaque covered the right knee. Both of these large platelike lesions were quite smooth but presented irregular elevations, some of them of a brighter yellow than the rest of the mass. This was particularly true of the right knee, below which two smaller growths were to be seen. A skin-colored growth was firmly fused to the lower part of each tendo achillis, the one on the right side, the larger, measuring 3 inches (7.6 cm.) by 1 inch (2.54 cm.). This bears out Siemen's statement, "Not everything which is a xanthoma is yellow."[48] As he has said, the color may vary with the location. This is particularly true of xanthome en tumeurs. Spillman has also referred to this phase of the question in describing "xanthome incoloré discret." The more recent opinion is that the color of these tumors is not due to the cholesterol and its esters, but is due to certain pigments belonging to the lipochrome group, the chief members of which are carotin and xanthopyll.

The apex beat was found 1 cm. to the left of the nipple line. A rough systolic murmur was easily heard all over the precordium, being transmitted to the axillary line and also up into the large vessels of the neck. Extrasystole occurred every thirty beats. The thyroid was enlarged transversely and presented a definite thrill. The other organs showed no demonstrable pathologic condition. The systolic blood pressure was 152 mm. of mercury, and the diastolic, 92 mm.

---

48. Siemens: Zur Kenntnis der Xanthome, Arch. f. Dermat. u. Syph., Orig., **130**:159-197, 1921.

Several blood counts and urinalyses showed nothing abnormal. Special emphasis is placed on the absence of sugar, bile and acetone in the urine. The Bordet-Wassermann reaction, as well as the gonococcus complement-fixation test, was repeatedly negative.

Roentgen-ray plates of the arms, legs, hands and feet showed no bony involvement, even adjacent to the larger tumors.

Two blood examinations for cholesterol were carried out in accordance with the colorimetric method of Autenrieth and Funk. The first one showed 0.182 mg. of cholesterol and the second one, 0.222 mg. As concerns food, our patient was on the regulation prison diet during his entire stay. The other ingredients of the blood found at the second examination were: nonprotein nitrogen, 26.30 mg.; performed creatinin, 1.62 mg.; sugar, 0.14 per cent.; and fat, 0.80 per cent. Seven cubic centimeters of blood were moved for each examination, being taken two hours after breakfast.

Operation.—A tumor weighing 42 gm. was removed from the left butttock under local anesthesia, and examined for cholesterol by Bloor's method.[49] The tumor contained 1.82 per cent. cholesterol. Other findings were: ash, 0.723 per cent.; alcohol and ether extract, 89.29 per cent.; residue after extract, 10.73 per cent. and fat, 16.82 per cent. Bloor states that his method, which differs from that of Autenrieth and Funk in that the lipoid material is extracted from the blood by treatment with alcohol and ether, gives on the average higher results by about 20 per cent. than the other method. It is also more simple and rapid. These tests are both preferable to that of Windaus[50] in which the cholesterol is precipitated by digitonin and thus separated from its esters. This requires a large amount of blood and considerable time.

HISTOPATHOLOGY

These curious tumors were early studied by Chambard, Virchow and Balzer. Among the more recent histopathologic studies may be mentioned those of Pollitzer and Wile,[51] Erich Schmidt, Knowles and Fisher, Arzt, de Gamrat and Corten.[52] Pollitzer and Wile's conclusions represent the prevailing opinion and may well be quoted as follows:

Xanthoma tuberosum represents an irritation connective tissue hyperplasia in which the extravasation of cholesterol fatty-acid esters, present in excess in the blood, serves as a stimulant. The first changes appear in the adventitial connective tissue cells of the smaller blood vessels of the papillary and subpapillary layers, which take up the lipoids poured out from the vessels, proliferate and increase in size, ultimately forming the typical xanthoma cells. The presence of the lipoids in the cells does not seem to affect their vitality, except in older tumors, where the layers adjacent to a vessel may become com-

49. Bloor: The Determination of Cholesterol in Blood, J. Biol. Chem. **24**: 227-230, 1916.

50. Windaus: Ueber die quantitativen Bestimmung des Cholesterins und der Cholesterinester in einigen normalen und pathologischen Nieren, Ztschr. f. physiol. chem. **65**:110-117, 1910.

51. Pollitzer and Wile: Xanthoma tuberosum multiplex, J. Cutan. Dis. **30**:235-241, 1912.

52. Corten: Beitrag zur Histogenese des Xanthoms, Frankfurt Ztschr. f. Path. **23**:389-404, 1920.

pletely obliterated by the lipoidal infiltration. The proliferation of the perivascular cells acts in turn as a stimulus to the development of connective tissue which, as fibroblasts and collagenous bundles, surrounds the nests of xanthoma cells and ultimately predominates over the xanthomatous elements.

Schmidt found considerable thinning of the epidermis due to mechanical pressure exerted by the xanthomatous new growth. The interpapillary processes had entirely disappeared. The tumor reached down to and involved the subcutaneous tissue as well. It was largely composed of very large giant cells and other large swollen cells, each with but a single nucleus. These structures had to a large extent replaced the normal elements of the cutis. No elastic fibers were present in the tumor.

Knowles and Fisher found many giant cells in sections from an Achilles' tendon xanthoma. In the same tumor the xanthoma cells frequently surrounded the capillaries like a mantle.

Arzt found epidermal thinning and involvement of the hypoderm by the xanthomatous process. He likens the xanthoma cells to ganglion cells. Some of them possessed four nuclei, but as a rule they were mononuclear. About the edges of the nodules he found numerous inflammatory elements, such as plasma cells, lymphocytes and scattered mast cells. Sections made from excised inguinal glands which were stained with Sudan III, scarlet R and osmium showed xanthoma cells filled with the characteristic droplets just as in the skin tumors.

De Gamrat found the epidermis thinned but intact so far as its component parts were concerned. The papillary layer was missing. Between the epidermis and new growth there was a zone of separation which was normal. The cholesterin infiltration reached down to the subcutis. Characteristic xanthoma cells were found in the walls of several of the larger blood vessels. De Gamrat compared them to phagocytes because of their being filled almost to bursting with the anisotropic droplets. We may recall that Anitschkow had previously termed them cholesterinester phagocytes. De Gamrat also found extracellular deposits of cholesterol in the meshes of the fibrous network. No evidence of degeneration was found in either the cell protoplasm or nuclei. No giant cells were present. An abundance of fibrous tissue was discovered.

Corten has described what he called a giant-cell xanthoma occurring in a diabetic patient. This he placed among the xanthomes en tumeurs. He believes that immature or not fully differentiated endothelial or connective tissue cells are most likely to be changed into xanthoma cells. In his case a histologic study seemed to show that the tumor originated from embryonic sweat gland tissue in a like manner to certain nevi.

HISTO-PATHOLOGIC FINDINGS IN AUTHORS' CASE

Our material was obtained from a large tumor which had been removed from the extensor surface of the right elbow. Frozen sections stained with Sudan III and counterstained with hematoxylin proved to be very satisfactory. The following description is largely taken from a study of such specimens.

Epidermis.—The epidermis was more or less flattened out so that the interpapillary processes were either wanting or rudimentary. A slight hyperkeratosis was present but no evidence of parakeratosis. The stratum granulosum stood out in bold relief. The prickle cells showed a slight intracellular edema here and there, as evidenced by an increase in the size of the perinuclear space. As a rule, this layer consisted of five rows of cells. At certain points where the underlying mass exerted considerable mechanical pressure, it was reduced to two rows of cells. The intercellular prickles were well preserved. An occasional leukocyte was seen between the cells of the rete. The basal layer appeared to be normal throughout and offered its usual sharp boundary between the epidermis and derma.

Derma.—With the low power lens it was at once apparent that the usual constituents of the derma had been to a greater or less degree replaced by areas which showed an affinity for the Sudan III. These were separated from one another by bluish bands, a result of coloring with hematoxylin. The papillary layer, to all intents and purposes, had ceased to exist. As a rule, the new growth was separated from the epidermis by a normal zone, narrow where the underlying mass was well developed and about equal in thickness to the normal epidermis where the xanthoma was less superficial. The high power lens showed that the yellow areas were largely composed of xanthoma cells, so grouped as to form good-sized perivascular nodules, separated by bands of newly formed connective tissue. The xanthoma cells were filled with sundanophilic droplets which varied in size, as Anitschkow has shown in rabbits. These droplets filled up the protoplasm completely but did not invade the nucleus. The xanthoma cells were several times larger than the fibroblasts and varied in shape. Some of them were oblong while others were more polygonal, particularly where a number were closely packed together. They were mononuclear as a rule, only a few having two nuclei. The nuclei were centrally placed. No true giant cells were seen, nor was there any evidence of cellular or nuclear degeneration. This tumor having been present for a number of years, it was not strange to find that in some parts the fibrous elements predominated over the xanthomatous tissue. As a whole, the tumor was not rich in blood vessels. Some of the capillaries were bounded by xanthoma cells. Some of the larger vessels showed thickened walls and a perivascular infiltrate composed of round cells, fibroblasts and xanthoma cells. Free cholesterol was seen in the meshes of the fibrous network but almost all of that substance was within the exanthoma cells. There was no xanthomatous involvement of the subcutis.

CONCLUSIONS

1. Xanthoma tuberosum is almost always accompanied by hypercholesterinemia.

2. The skin tumors affect by choice those areas which are predisposed to trauma.

3. This disorder is not confined to the skin but may affect almost any organ of the human economy.

4. Well marked examples of this curious disorder may occur in the absence of any demonstrable liver disease or diabetes. These have been appropriately termed "essential" by Arning and Lippmann. Our case comes under this category.

5. The cardiovascular system and Achilles' tendon sheaths seem to be favorite locations, after the skin.

6. Heredity appears to be a factor in a number of cases.

7. This is not a degenerative condition but rather an infiltrative process, the lipoidal material infiltrating certain types of cells—connective tissue and endothelial—which seem predisposed to this process.

8. The newer colorimetric methods of Autenrieth and Funk and also that of Bloor are preferable to the older and more complicated methods.

7 West Madison Street, Chicago.

CORRECTION

In Dr. Netherton's article on "Melanoma of the Lower Lip," on page 404 of the September issue, in the fifth line of the paragraph on the "Clinical Course," "5 mm. of silver" should have been "0.5 mm. of silver."

Abstracts from Current Literature

INTRODUCTION OF COCCIDIOIDAL GRANULOMA INTO CHICAGO. H. F. HIRSCH, J. A. M. A. **81**:375 (Aug. 4) 1923.

This is a report of a case affecting the lungs. The patient was a Pullman porter who traveled between Los Angeles and Chicago. Hirsch believes that the disease is either more widespread than has been thought or is being slowly introduced into parts of the country hitherto free from it.

EXPERIMENTAL HERPES ZOSTER: PRELIMINARY REPORT. O. TEAGUE and E. W. GOODPASTURE, J. A. M. A. **81**:377 (Aug. 4) 1923.

These experiments were carried out with virus from a herpes lesion of the lip. Inoculation on the cornea of rabbits was successful and carried from animal to animal without difficulty. Inoculations into the skin rendered more susceptible by coal tar applications were also successful. The animals in all these experiments died of encephalitis, characteristic cell-inclusion bodies being found in sections of the brain. In one experiment the three spinal ganglions on the side and nearest the site of inoculation were ground up with saline solution and injected into the brain of a normal rabbit. Encephalitis with characteristic pathologic findings ensued. From these experiments it is seen that the herpes virus first multiplies at the site of inoculation in the skin, passes up the corresponding spinal nerve to its spinal ganglion, and then seems to pass centrifugally along the nerve to the skin, where it gives rise to herpetic vesicles. It is possible that it may pass along the nerve branches without reaching the spinal ganglion.

CERTAIN FACTORS IN DEVELOPMENT OF NEUROSYPHILITIC LESIONS IN LATE CONGENITAL SYPHILIS. E. G. ZABRISKIE, J. A. M. A. **81**:523 (Aug. 18) 1923.

From his own observations and extensive perusal of the literature, the author discusses at some length the development of neurosyphilis in persons with congenital syphilis. The influence of gonadal infection, of toxin reaction, and of the lipoids on the course of the disease are discussed. The latter undoubtedly play a subtle but poorly understood part in the biochemical changes which underly the march of events in syphilis.

The tissue affinity, or the virulence, of spirochetal strains appears to be of less importance than the capacity of the individual to overcome or resist the activity of the spirochete.

FUNGOUS DISEASES OF MAN IN THE STATE OF NEBRASKA. M. G. WOHL, J. A. M. A. **81**:647 (Aug. 25) 1923.

Wohl has been able to collect reports of twenty-eight cases of sporotrichosis, blastomycosis, and actinomycosis occurring in Nebraska. Sporotrichosis occurred most frequently. In his experience, surgical intervention aggravated the lesions, while they readily yielded to potassium iodid internally, compound solution of iodin, copper sulphate and roentgen ray locally.

ACTINOMYCOSIS OF THE ABDOMINAL WALL. H. Albert, J. B. Hardy, and J. W. Harrison, J. A. M. A. **81**:653 (Aug. 25) 1923.

Two cases of the disease are reported. In both there were symptoms of acute abdominal infections followed by the development of abscesses and extensive sinuses, and terminating fatally. While the condition is rare, it should be suspected whenever burrowing sinuses and abscesses of the abdominal wall occur and persist despite surgical measures. The prognosis depends largely on early diagnosis and vigorous treatment, but, at best, is unfavorable. The abdominal wall is probably always secondarily infected from the gastro-intestinal tract.

DISTRIBUTION OF ACTINOMYCOSIS IN THE UNITED STATES. A. H. Sanford, J. A. M. A. **81**:655 (Aug. 25) 1923.

An extensive survey of this question led to the following conclusions:

"Actinomycosis is distributed widely in this country, being especially prevalent in the upper Mississippi valley and the northwest portion of the country. It is far more common than one is lead to believe from the scattered reports that have appeared in the American literature. This fact should make all physicians more alert in the diagnosis of the disease, which is easily made from a microscopic examination of the discharges. The public generally might be warned of the danger of chewing straws, weeds and grain, as a possible means of infection with *Actinomyces*. Much is yet to be learned, however, with regard to the source of infection in man and animals, and also much is to be done in the proper classification and the bacteriologic investigation of the different species in this group."

Michael, Houston, Texas.

OBJECTIONS TO THE CONCEPTION OF LICHENIFICATIONS. L. Brocq, Ann. de dermat. et syph. **4**:273 (May) 1923.

In reply to an article by Dind, which appeared in the *Annales* during 1920 (page 283), and which has been abstracted in the Archives (**3**:426, 1921). Brocq stresses the points of clinical and histologic distinction between lichen planus and neurodermite and criticizes the manner in which Dind has approached the subject. Dind considered it likely that both conditions were caused by the same infectious agent, as yet undiscovered, a view which Brocq considers almost impossible.

THE DIFFUSION OF URANIN INTO THE CEREBROSPINAL FLUID OF SYPHILITIC PATIENTS. O. Jersild, Ann. de dermat. et syph. **4**:313 (May) 1923.

Three or four hours after the oral administration of this coloring matter, spinal puncture was performed in twenty-one nonsyphilitic and 231 syphilitic patients. It was detected in the fluid in 8.7 per cent. of the former, and in 23.5 per cent. of the latter, and especially in those with pathologic cerebrospinal findings.

MYCOSES IN MADAGASCAR. M. Fontoynont and H. Boucher, Ann. de dermat. et syph. **4**:210 and 318 (April and May) 1923.

The authors carefully describe illustrative cases, often with the aid of photographs, and they give a detailed description of the offending organism and its biologic characteristics in each case, with the help of ink sketches.

Sporothrix, cryptococcus of various types, *Mycoderma rabesalama* and *acremonium muthuoni* are among the pathogenic agents. These infections are numerous in Madagascar.

VEGETATING AND VERRUCOUS SPOROTRICHOSIS OF THE NOSE SIMULATING TUBERCULOSIS VERRUCOSA CUTIS. M. FERRAND and H. RABUT, Ann. de dermat. et syph. **4**:344 (May) 1923.

In this peculiar case the submaxillary lymph nodes were involved. The diagnosis was made on cultural rather than on histologic findings, and rapid healing followed the administration of compound solution of iodin intravenously and by mouth.

A CASE OF PERIFOLLICULAR PSEUDOCOLLOID NEVUS (MILIARY COLLOID DEGENERATION OF THE DERMA). J. MONTPELLIER and A. LACROIX, Ann. de dermat. et syph. **4**:381 (June) 1923.

A palm-sized patch of these miliary lesions was found over the left scapula of an Algerian native, aged 18 years. The translucence and spongy feel of colloid milium were absent, but histologic study revealed the presence of a nevoid structure, absolutely noninflammatory, with degeneration of the collagen and rarefaction of the elastic tissue. The authors consider it a nevus.

INFLUENCE OF CUTTING AND REPEATED SHAVING ON THE GROWTH OF HAIR. H. BULLIARD, Ann. de dermat. et syph. **4**:386 (June) 1923.

The author has found that cutting has no effect on the growth of hair, and he reports an interesting case of alopecia areata as an example. To stimulate hair growth, he recommends massage and local applications, together with endocrine therapy, especially thyroid.

INTERTRIGO MYCOSES. R. SABOURAUD, Ann. de dermat. et syph. **4**:425 (July) 1923.

Referring to the report of Petges on this subject at the recent Congress of French-Speaking Dermatologists, the author stresses the extreme difficulty of finding the etiologic factor in many of these cases. Ordinary intertrigo is considered by Sabouraud to be always of streptococcic origin, the causative organisms being between the layers of the epidermis and discoverable only by anaerobic cultures. The other organisms which have been found are held by him to be contaminations. Sabouraud cautions those investigating mycotic infections of the hands and feet to search long and diligently for an ordinary offender in each case, instead of incriminating yeasts and various rare fungi. Too many new forms are being described, and the author feels confident that many of them have been contaminations. No organism should be incriminated unless it be found capable of producing lesions when taken from pure culture.

THE PAGETOID EPITHELIOMA. OLGA ELIASCHEFF, Ann. de dermat. et syph. **4**:433 (July) 1923.

The author gives a careful description of this type of epithelioma, which is relatively nonmalignant and slow growing, the basal cell type predominating, and reports the histologic appearance of a case showing dyskeratosis, basal cell and prickle cell epithelioma combined in the same lesion. It bore considerable

resemblance to nevocarcinoma. Paget's disease and Bowen's precancerous dermatosis are closely simulated by these epitheliomas, so closely that only biopsy examination and observation of the clinical course can decide the question of diagnosis.

THE CYTOLOGIC STUDY OF SYPHILOMA. C. LAURENTIER, Ann. de dermat. et syph. **4**:445 (July) 1923.

The author considers the macrophagocytes, the plasma cells and their relatively small number, the vascular changes, and the variable differential blood counts, concluding that there is nothing specific in the histologic or cytologic structure of the syphiloma, and that the term "plasmoma" should not be retained; that the cellular elements which constitute the reaction of living tissues to *Spirochaeta pallida* are simply elements of connective tissue origin and of multiple forms, deprived of all specificity. He feels that there is no histologically characteristic "syphiloma."

CUTANEOUS PIGMENT. K. LINDBERG, Ann. de dermat. et syph. **4**:353 and 448 (June and July) 1923.

Lindberg gives an extensive review of the literature dealing with the chemical nature of the cutaneous pigment and with its mode of origin and production. He cites all of the pathologic conditions under which its quantity is altered, including a consideration of canities, and emphasizes the importance of making further studies to determine the causes of these variations which accompany internal changes in the organism. An eleven-page bibliography is appended.

ANOTHER CASE OF UNILATERAL HUTCHINSONIAN TEETH. A. LYON, Ann. de dermat. et syph. **4**:484 (July) 1923.

Added to the two cases which Audry has reported, this makes the third case which has occurred in the same clinical service, indicating that this condition may not be unusual. The patient, a boy, aged 16, had an apparently syphilitic testicular condition, an old iritis and a weakly positive Wassermann reaction. His father was tabetic, with a positive Wassermann reaction in both blood and cerebrospinal fluid.

THE SIGN OF TEMPORARY SEROLOGIC POSITIVITY IN THE TREATMENT OF PRIMARY SYPHILIS. A. TZANCK, Bull. Soc. franç. de dermat. et syph. **30**:227, 1923.

During the treatment of primary syphilis, when mercury, bismuth or subcutaneous injections of the arsenical drugs are employed, a serologic examination made twice a week will usually show the development of a transient positivity of the Wassermann reaction at about the twentieth day, according to the author. With the intensive administration of the arsphenamins intravenously, however, this does not often occur. He considers this a good way to determine the efficiency of antisyphilitic drugs.

LIVIDITY OF THE EXTREMITIES, WITH A TENDENCY TO ATROPHY (POSSIBLY RELATED TO POIKILODERMA). RABUT, CAILLIAU and RICHON, Bull. Soc. franç. de dermat. et syph. **30**:230, 1923.

In a woman, aged 27, and otherwise apparently healthy, this condition had first appeared fifteen years previously, the legs, thighs, forearms and arms

having been successively involved, without edema or pruritus, but with the occurrence of some superficial ulcerations from time to time. There was a diffuse papillary infiltrate, with pigmentation; the elastic tissue was somewhat fragmented, the connective tissue thinned and hyalin, and the thinned epidermis was hyperkeratotic. In the differential diagnosis, acrodermatitis chronica atrophicans and other conditions were considered and excluded.

A CASE OF RECURRENT HERPES OF THE BUTTOCK; ITS INFECTIOUS NATURE. G. Milian, Bull. Soc. franç. de dermat. et syph. **30**: 234, 1923.

A rabbit's cornea was inoculated with the contents of a fresh vesicle of recurrent herpes, outbreaks of which had appeared every two or three months for six years. Keratitis ensued, followed by encephalitis, indicating that recurrent herpes is of infectious nature, rather than trophic. The occurrence of tissue immunity was suggested by the tendency of succeeding outbreaks to occur just outside the old scars. The value of roentgen-ray therapy is mentioned.

A HEMORRHAGIC PAPULAR ERUPTION ACCOMPANYING A GONORRHEAL INFECTION, BECOMING NODULAR AND KERATODERMIC. Lortat-Jacob and Solente, Bull. Soc. franç. de dermat. et syph. **30**:242, 1923.

This eruption appeared about the ankles of a man with gonorrheal urethritis and a polyarthritis, whose blood culture was negative. The feet, hands, face and glans penis were subsequently involved, the latter possibly by external transmission of the organism. The histologic picture was somewhat suggestive of psoriasis.

SARCOIDS OF THE LOWER EXTREMITIES IN SCLERODERMIFORM PLAQUES. H. Gougerot and P. Fernet, Bull. Soc. franç. de dermat. et syph. **30**:245, 1923.

In a woman, aged 30 years, the lesions, at first nodular, were of nearly two years' duration, the legs and ankles being chiefly involved. The overlying skin was bound down and puckered, but movable over the deeper structures. After a few injections of sodium cacodylate there was some improvement. There was a pulmonary infection, probably tuberculous. No histologic examination was made.

SYPHILITIC REINFECTION AFTER TREATMENT WITH BISMUTH. H. Gougerot and P. Fernet, Bull. Soc. franç. de dermat. et syph. **30**:247, 1923.

In June, 1922, a young man had had two penile sores, followed within fifteen days by the appearance of a maculopapular eruption, typical of syphilis, with accompanying adenopathy. One course of a bismuth preparation was administered, and the first injection of a second course, and then the patient disappeared, his Wassermann reaction being one plus positive. There is no mention of a dark-field examination having been made. Subsequently, in April, 1923, the same patient reappeared with a fresh penile sore in which *Spirochaeta pallida* was found, the Wassermann reaction being at first negative, then positive.

TWO CASES OF PSORIASIS IN WHICH A PSORIASIFORM ERUPTION APPEARED IN SPOTS PAINTED WITH TINCTURE OF IODIN. HALBRON, BARTHÉLEMY and BRIZARD, Bull. Soc. franç de dermat. et syph. **30**:250, 1923.

This occurred in the case of two women, aged 22 and 36 years, who had had psoriasis for eighteen and twenty-six years, respectively. A biopsy examination was made in the first case, and the diagnosis was confirmed, although subsequent attempts to reproduce this phenomenon failed.

POROKERATOSIS OF MIBELLI. LOUSTE, THIBAUT and G. BARBIER, Bull. Soc. franç. de dermat. et syph. **30**:252, 1923.

An Italian chauffeur, aged 27 years, had first noticed the presence of lesions at puberty, and they had gradually increased since that time, involving the left hand and foot, the abdomen and the face. The lesions were typical of the condition as described by Mibelli, and the diagnosis was verified histologically. This condition is rare in France. A peculiarity of this case was the palmar hyperhidrosis. In the discussion, Balzer reports having seen a similar case at the Hospital Saint Louis.

MULTIPLE TUBERCULOUS LESIONS, CUTANEOUS AND VISCERAL. HUDELO, RICHON and CAILLIAU, Bull. Soc. franç. de dermat. et syph. **30**:256, 1923.

A man, aged 47, presented many foci of skin tuberculosis, some of which were ulcerated. This diagnosis was confirmed histologically. Pulmonary and testicular tuberculosis were subsequently found. According to the patient, the condition was of two years' duration.

SEROLOGIC DIAGNOSIS OF SYPHILIS. B. BALLET and M. RUBINSTEIN, Bull. Soc. franç. de dermat. et syph. **30**:259, 1923.

The reaction of Jacobsthal, which does not differ fundamentally from the Wassermann reaction, is said to be absolutely specific and sensitive, and should be used as a control to treatment, with the reactions of Hecht and of Wassermann.

EPITHELIAL ORIGIN OF CUTANEOUS PAPILLAE. E. RETTERER, Bull. Soc. franç. de dermat. et syph. **30**:267, 1923.

With the aid of photomicrographs, the author describes sections from the integument of human and equine embryos, arriving at the conclusion that the dermal papillae result from the transformation of epithelial cells into connective tissue, being apparently derived from what he designates as the deep layer of the epidermis.

LICHENOID ERUPTION DUE TO BISMUTH IN A PATIENT WHO HAD FORMERLY PRESENTED A SCARLATINIFORM ERYTHEMA FOLLOWING THE ADMINISTRATION OF ARSPHENAMIN. NICOLAS, GATÉ and LEBEUF, Bull. Soc. franç. de dermat. et syph. **30**:275, 1923.

Ten days after the arsphenamin eruption had subsided, bismuth having been administered in the interim, there appeared an almost generalized eruption

of acuminate follicular papules, red and slightly pruritic, resembling lichen scrofulosorum. Thus far, eruptions following the use of bismuth have been described as desquamative erythrodermas, purpuric outbreaks, eczematiform and urticarial rashes.

A CASE OF ZONIFORM LICHEN PLANUS FOLLOWING A MOSQUITO BITE. L. Bory, Bull. Soc. franç. de dermat. et syph. **30**:284, 1923.

A woman, aged 38, was bitten on the right wrist by a mosquito. A pruritic plaque appeared and persisted at this site, and several months later an outbreak of linear lichen planus appeared, limited to the right shoulder, arm and forearm. The author holds that the causative virus was introduced probably by the mosquito, passed through a latent period, and then traveled by way of the lymphatic vessels, producing the eruption.

Parkhurst, Toledo, Ohio.

SOME CONSIDERATIONS ON VITILIGO. K. Lindberg, Presse méd. **31**: 196 (Feb. 28) 1923.

The author, in an extensive article on this subject, discusses all of the possible etiologic factors of vitiligo. He believes it is more frequently seen in persons who are markedly pigmented normally or in the affections accompanied by hyperpigmentation, such as Addison's and Recklinghausen's diseases. It is seen also in syphilitic persons and sometimes occurs in the erythematous spots consecutive to syphilis. Antisyphilitic treatment has occasionally caused complete repigmentation of the vitiliginous areas. In some cases the vitiliginous areas preceded syphilitic infection, and later these areas enlarged following syphilitic infection. Is it a question of direct action by spirochetes on the skin, or is it an indirect action on the suprarenal glands?

Vitiligo has often been associated with alopecia areata. Lévy-Franckel believes that it is a sympatico-endocrine syndrome. It frequently occurs after removal of the ovaries. Some observers have completely cured vitiligo by prolonged administration of first suprarenal and then ovarian extracts. It frequently follows psoriasis, lichen planus and lichen simplex chronicus of Vidal, also seborrheic eczema (Gougerot) and parapsoriasis (Almkvist), as well as different traumatic conditions, from hernial bandages, corsets, etc. Pigmented nevi are occasionally seen in the center of a spot of vitiligo. It is necessary in some cases to admit the existence of a constitutional deficiency in the pigmentary process, which results in various congenital defects.

In conclusion, the author says he does not believe that it should be associated with syphilis so frequently.

DERMATOLOGICAL REUNION AT STRASBOURG, MARCH 11, 1923, Presse méd. **31**:308 (March 31) 1923.

Extensive Scleroderma on the Arm and Trunk.—Hugel presented a woman, aged 23, in whom the lesions began at the age of 15 years. These lesions attacked the right leg, right arm and trunk. There were no visceral lesions. Hugel recalled the work on polyglandular opotherapy applied in the treatment of scleroderma in generalized plaques. He has used it on this patient.

Disseminated Miliary Lupoid of the Face.—Pautrier and Roederer presented a young woman, aged 30. The patient had been presented at the reunion on the previous July. Neo-arsphenamin treatment had been given the patient until she developed jaundice. The lesions were cured, but they disappeared slowly.

Precocious Tertiary Syphilitic Gumma.—Eliascheff presented a young man, aged 24, who had a chancre in March, 1922, followed by a papular eruption of the trunk, with alopecia. He received a thorough course of neo-arsphenamin and mercury. In December there appeared in the region of the right parotid gland two subcutaneous nodules which increased in size, became confluent and ulcerated. The ulcerations were deep, showing the ascending branch of the inferior maxillary nerve. Eliascheff called attention to the precocious appearance of these tertiary lesions and discussed the possibility of late hereditary syphilis or of precocious acquired tertiary syphilis

Two Cases of Exfoliating Erythroderma Following Psoriasis.—Roederer presented two cases—the first case was that of a man, aged 42, who had psoriasis in August, 1922, for the first time. He was treated with Asiatic pills and later chrysophanic acid. Erythroderma developed soon after. The second case was that of a woman, aged 48, in whom psoriasis appeared at the time of her menopause. She was treated with the roentgen ray. Two months after the last roentgen-ray treatment, erythroderma began, associated with fever, oliguria, albuminuria, alopecia and trophic disturbances of the nails. Roederer thought roentgen-ray therapy might have caused his second case, and he said that the psoriasis reappeared as the erythroderma receded.

Probable Tuberculous Leprosy in a Malgache.—Pautrier and Boez presented a soldier who had a large plaque in the form of a sleeve on the skin. It was clearly defined, finely desquamating, not cicatrical and with a red infiltrated violaceous border. Along this border were some small isolated nodules vaguely lupoid in shape. On the face in the region of the zygoma was a plaque the size of a five franc piece, desquamating and infiltrated. There was a small plaque on the occiput. On the back of the right hand there were three plaques. The left cubital nerve appeared slightly enlarged. Bacteriologic and histologic research have given the following results: On a cross section the bacillus of Hansen was not seen. The histology suggested cutaneous tuberculosis. Inoculation into a guinea-pig caused an abscess at the end of eight days, in which there were found numerous acid-fast bacilli. Pautrier and Boez, after considering the case carefully, believed it to be tuberculoid leprosy.

A Case of Hepatic Gumma Verified by Exploratory Laparotomy.—Hickel presented a woman, aged 31, in whom was found a large tumor in the region of the liver. The first condition suggested was a tumor of the stomach, then a gumma of the liver. The Wassermann reaction was positive. Exploratory laparotomy revealed a gumma in the left lobe of the liver (verified by biopsy).

Two Cases of Generalized Circinate Lichen Planus in Erythrodermic Form: The Appearance of Generalized Lichen Planus After Administration of Neo-Arsphenamin.—Pautrier reported observations on a man, aged 35, showing a generalized erythroderma, while at the margin were small islands of normal skin and some fine lesions of circinate lichen planus of the buccal mucosa. The second patient, aged 38, was under treatment for secondary syphilis and had received, in four months, twelve injections of neo-arsphenamin and twenty-seven injections of mercury. Two months after the end of treatment he developed an exfoliating erythroderma. Irregular macules appeared; also some characteristic lesions of circinate lichen planus, which became generalized and lasted several months. Pautrier mentioned the abnormal type which results from erythroderma, presenting in its evolution small verrucous lesions in which neo-arsphenamin is responsible. He said that lichen planus

evolved from this erythroderma and asked whether neo-arsphenamin does not in turn provoke its appearance. He recalled some similar cases presented to the French society, examined the different possibilities, and recommended prudence in the treatment of lichen planus by arsenic.

DERMATOLOGICAL REUNION AT STRASBOURG, MAY 13, 1923, Presse méd. **31**:491 (May 30) 1923.

Ulcerating Tuberculous Lesions of the Face and Upper Air Passages.—Canuyt and Salmon presented two adults with ulcerating lesions of the skin and upper air passages, in whom they admit the co-existence of an hereditary syphilis which Ricord called "scrofulates de verole." They have had good results, notably with potassium of iodide.

Post-Traumatic Spinocellular Epithelioma of the Nose.—Eliascheff presented a man, aged 60, who had suffered four years from a traumatism at the right side of the nose, on which area the epithelioma developed.

Ozena of the Nasal Foci Probably Due to Hereditary Syphilis, Ameliorated by Bismuth.—Walter and Roederer presented a woman, aged 24, with an ozena probably due to hereditary syphilis, which had been considerably ameliorated by ten injections of bismuth.

Oriental Boil of the Nose.—Pautrier and Roederer presented a young Armenian, aged 15, who had an oriental boil, which healed rapidly under the action of intravenous injections of chloral hydrate of emetin.

Verrucous Angioma of the Entire Right Leg.—Pautrier presented this angioma showing the results of treatment by electricity and carbon dioxid snow. The snow was preferable as a therapeutic agent.

Vegetating Papillary Epithelioma with Multiple Histologic Differentiations.—Pautrier, Lévy and Lanzenberg presented a patient who had an epithelioma for four years in the perineal region. The histology was curious as there were multiple differentiations. This demonstrated the necessity of a new classification of epitheliomas.

Mycosis Fungoides in Tumors of a Special Histologic Type.—Pautrier presented a case of mycosis fungoides particularly resistant to irradiation. This resistance was explained by the histology of the tumors.

BISMUTH THERAPY IN HEREDITARY SYPHILIS. Cajal, M., and Spierer, H., Presse méd. **31**:354 (April 18) 1923.

The authors report favorable results in the treatment of hereditary syphilis with bismuth. This, they believe, is the first official report of hereditary syphilis being treated by this form of therapy. They come to the following conclusions: Bismuth may be employed without inconvenience in syphilitic children; it offers no contra-indication; they recommend the oily suspension of tartrobismuthate of sodium and potassium because of its activity and nontoxicity, and because it is painless; it heals hereditary syphilitic lesions as rapidly as arsphenamin and more rapidly than mercury; it has an immediate action on syphilitic coryza, and renders the Wassermann test negative; the action of bismuth from the point of view of nervous affections due to syphilis is indisputable; it does not reduce splenomegaly, but neither do mercury and arsphenamin. The dosage employed is slightly larger for infants than for adults, comparatively speaking; the authors believe that bismuth, arsphenamin and mercury may all be used with success in children.

STERILITY AND ROENTGEN RAYS. Belot, J., Presse méd. **31**:642 (July 21) 1923.

Total sterility has been produced by several authors in small animals. Sterility for a certain period has been produced in men in Germany, but these men were not examined later to discover whether sterility persisted. The action on the ovary is the same as on the testicle. If all the follicles of the ovary are completely destroyed, sterility is permanent, because new follicles cannot reform. However, for total destruction, it is necessary that the ovaries absorb a large quantity of radiation. It is difficult to obtain in young women, even with large and frequently repeated doses, the arrest of menstruation, which is a symbol of sterility; this condition is only temporary. The exact dosage required to produce sterility in the ovary is not known, and it varies markedly in different persons. Small doses of roentgen ray frequently repeated can produce the same effect and render the person sterile. For this reason, Belot thought that possibly radiologists and their assistants might become sterile; but on interrogating them it was found that the leading radiologists of France, who had been using the roentgen ray for a number of years and in the course of time had married, were able to beget progeny. Several of the assistants were women who had worked for a number of years in the laboratories, and they later married and had children. The author concludes, therefore, that it is high time to destroy the legends and fables of sterility being produced by indirect radiation in laboratory workers.

L. K. McCafferty, New York.

PATHOGENESIS OP PSORIASIS. G. Verrotti, Gior. ital. mal. ven. **64**: 539 (May) 1923.

The author reports six cases, in all of which the patients had marked disturbances of the ovarian function. Four of the six cases reported cleared up under the administration of ovarian extract.

VITILIGO AND OVARIAN EXTRACT. M. Artom, Gior. ital. mal. ven. **64**: 614 (May) 1923.

This is the report of a case of vitiligo completely cured by injections and oral administration of ovarian extract. The author remarks that high doses are necessary to obtain results.

BISMUTH IN LEPROSY. M. Matta, Gior. ital. mal. ven. **64**:649 (May) 1923.

Bismuth salts, which have been used successfully in syphilis, are of no value in the treatment of leprosy.

SPIROCHETES IN CONDYLOMA ACUMINATUM. C. Lombardo, Gior. ital. mal. ven. **64**:715 (May) 1923.

Lombardo has not been able to reproduce condyloma acuminatum with the filtrate of extracts of the growths. He has found different spirochetes on the surface and in the sections of cases of condyloma acuminatum. In his opinion, these spirochetes are saprophytic and have no etiologic significance.

TREATMENT OF NEUROSYPHILIS. M. ALURRALDE, Prensa méd. Argentina **9**:933 (April 20) 1923.

Neurosyphilis is more common since the discovery of arsphenamin, especially in patients treated with this drug alone. Mercury and arsphenamin given in large doses and for a long time are the drugs used by the author. A course of injections of a strong mercurial is usually given before the administration of arsphenamin. In cases in which arsphenamin and mercury are not followed by a rapid improvement, intraspinal treatment is indicated. Arsphenamin is contraindicated in certain cases with acute mental symptoms.

V. PARDO-CASTELLO, Havana.

THE RELATIONSHIP OF THE ECZEMAS TO THE ARTIFICIAL DERMATITIDES AND TO IMPETIGO. LUDWIG TÖRÖK, Dermat. Wchnschr. **76**:273 (March 31) 1923.

In the eczemas there is a superficial inflammatory process, the serous exudate separating the epidermal cells and forming vesicles, which usually rupture. The borders of the patches are indistinct and irregular, and neighboring areas often become confluent. These processes are brought on by chemical or physical irritation in susceptible persons. The pyogenic micro-organisms also play a rôle in their formation. Itching is the rule, and the course may be acute or chronic, with recurrences and exacerbations. Lichenification is a frequent complication in cases of long standing.

THE SIGNIFICANCE OF THE PLAUT-VINCENT FLORA IN AN ULCERATIVE INTERDIGITAL CONDYLOMATOSIS. PAUL BEUTL, Dermat. Wchnschr. **76**:282 (March 31) 1923.

In a girl, aged 18, bismuth injections were followed by the disappearance of syphilitic manifestations, including genital condylomas. Between the toes, however, were persistent lesions which had previously contained both *Spirochaeta pallida* and the Plaut-Vincent organisms, and here the latter remained. Two neo-arsphenamin injections were followed by the disappearance of these condylomas.

THE TREATMENT OF FROST-BITE WITH ROENTGEN RAYS. HERBERT FUHS, Dermat. Wchnschr. **76**:293 (April 7) 1923.

Fujinami has found this treatment useful in frost-bite pernio, but the present author has tried it in a number of cases with disappointing results.

OVERDOSING WITH BISMOGENOL. FRIEDRICH PRATER, Dermat. Wchnschr. **76**:299 (April 7) 1923.

A transient stomatitis and albuminuria was produced in a syphilitic patient by the administration of enormous doses of an insoluble bismuth salt intramuscularly.

BISMUTH TREATMENT OF SYPHILIS. RICHARD NEUENDORFF, Dermat. Wchnschr. **76**:301 (April 7) 1923.

The intramuscular administration of a bismuth compound in forty-three cases was followed by the disappearance of syphilitic lesions, but the Wassermann reaction was slowly influenced. In four cases severe renal irritation

appeared, indicating the necessity of establishing a safer dosage limit before the bismuth preparations can take their place beside the mercurials in the treatment of syphilis.

A CONTRIBUTION TO THE STUDY OF LOCALIZED CONGENITAL TUMORS OF THE NECK. Oskar Kiess, Dermat. Wchnschr. **76**:313 (April 14) 1923.

With the aid of clinical and histologic photographs, the author describes the case of a boy with a chronic inflammatory process in the connective tissue of the nuchal region, which he designates as a diffuse fibromatosis. It had been present at birth, and had gradually enlarged.

THE PATHOGENESIS OF AXILLARY ABSCESSES. Gans, Dermat. Wchnschr. **76**:318 (April 14) 1923.

Contrary to the usually accepted theory of hair follicle or sweat duct infection, the author holds that the organisms come by way of the lymphatics, and he supports this view by giving a complete clinical and histologic description of two incipient cases, with photomicrographs. He admits the possibility of occasional hematogenous infection.

WATER CONTENT AND ITS SIGNIFICANCE IN PATHOLOGIC CONDITIONS OF THE SKIN: II. THE WATER CONTENT OF THE ERYTHROCYTES. CHOLESTERIN. Erwin Pulay, Dermat. Wchnschr. **76**:333 (April 21) 1923.

In nine cases, including eczematous and impetiginous dermatoses, the water content of the whole blood, serum and erythrocytes, and also the cholesterin content, was determined. There appeared to be no relationship between the cholesterin content of the red blood corpuscles and their water content.

CONTRIBUTION TO THE QUESTION OF SPORE-FORMING ABILITY OF PARASITIC AND PATHOGENIC YEASTS. A. Buschke and F. Harry, Dermat. Wchnschr. **76**:357 (April 28) 1923.

By proper staining, the acid content of the nucleus can be shown. Hayduck and Hahn have concluded that the vegetative power of the yeast is directly proportional to the amount of acid present and thus demonstrated. In the opinion of the present authors, further studies of the biochemistry of the yeast cell are necessary.

THE INTRACUTANEOUS HORSE SERUM REACTION IN SKIN TUBERCULOSIS. H. Löblich, Dermat. Wchnschr. **76**:377 (May 5) 1923.

This reaction, devised by Busacca, was tried by the author in seventeen cases of florid lupus vulgaris, in fourteen cases of nontuberculous skin disease, and in nineteen patients suffering from gonorrhea but otherwise apparently healthy. The results were extremely disappointing in comparison with those from the von Pirquet reaction, which was run in parallel on the same patients.

PECULIARITIES OF MYCOTIC INFECTIONS OF THE NAILS. Franz Wirz, Dermat. Wchnschr. **76**:380 (May 5) 1923.

Three cases are described: In the first, one year after the apparently complete cure of a mycotic eruption of the hands, the nail infection became manifest;

the causative organisms were found. In the second case, nine fingernails had been infected for sixteen years, but never the tenth. The third patient presented extensive clinical manifestations, although the causative organisms were apparently few.

THE ROENTGEN-RAY TREATMENT OF FURUNCULOSIS AND HIDRADENITIS AXILLARIS. HERBERT FUHS, Dermat. Wchnschr. **76**:390 (May 5) 1923.

Favorable results followed the administration of an epilating dose of hard filtered rays to an area about 10 cm. square, 6 Holzknecht units being the amount given, and the filter being 2 mm. of aluminum. Inflammation subsided soon after this treatment, but in some cases there was a tendency to recurrence from four to six weeks later.

FUNGUS AFFECTIONS DUE TO TRICHOPHYTON VIOLACEUM (RELATIVE TO THE FUNGUS FLORA IN VIENNA). L. ARZT and H. FUHS, Dermat. Wchnschr. **76**:409 (May 12) 1923.

From April to November, 1922, the authors saw eighteen cases in which the offender was *Trichophyton violaceum;* sixteen of these patients came from orphanages. The scalp was always involved, and only in two cases were there foci on the glabrous skin. Except in three cases of rather intense inflammation, the intracutaneous trichophytin reaction was negative. Epilation by means of roentgen rays, followed by the use of a mild scaling ointment, seemed to be a most successful form of treatment.

A CLINICAL AND HISTOLOGIC STUDY OF LICHEN PLANUS PEMPHIGOIDES. ADOLF POKORNY, Dermat. Wchnschr. **76**:414 (May 12) 1923.

Following a detailed clinical and histologic report of a case observed by himself, the author concludes that the vesicles, which he found to be colliquative, and arising either from erythematous or apparently normal skin, could precede or succeed lichen planus nodules at the same sites, and had the typical epidermal features of lichen planus. Besides ballooning cells, the vesicles showed considerable pigmentation, so that the author feels that the pigmentation accompanies rather than follows the inflammatory process in lichen planus. In his estimation, the tendency to vesiculation is merely an evidence of increased intensity of the exudative process.

INVESTIGATIONS REGARDING THE ELIMINATION OF BISMUTH. HERMANN STRAUSS, Dermat. Wchnschr. **76**:417 (May 12) 1923.

The author describes the technic of a method he has devised for recovering bismuth from the urine, which he calls the "reversed Nylander reaction." It should be of value in determining the length of time during which bismuth continues to be eliminated after treatment has been discontinued.

CLINICAL ASPECTS OF THRUSH OF THE SKIN. MICHAEL LANG, Dermat. Wchnschr. **76**:429 (May 19) 1923.

The author reports the case of a man, aged 20 years, with two patches of the dermatosis on the upper inner surface of the thigh, from which the organisms were recovered and grown. Infection may have been transmitted by

a cat. The localization is characteristic of the affection, the site being warm and moist, conducive to growth of the organism. The plaques, irregularly oval, are erythematous, the center being little paler than the periphery, and the easily detachable scales are considered characteristic of the condition. The author's patient was cured in two weeks by the application of 2 per cent. resorcin in tincture of iodin.

THE TREATMENT OF ORIENTAL SORES BY MEANS OF DIATHERMY. H. Behdjet, Dermat. Wchnschr. **76**:433 (May 19) 1923.

Four cases are reported as thus treated at the author's clinic in Constantinople, and he considers this method ideal, rapid cure resulting and scar production being minimized.

CONCERNING ULCUS VULVAE ACUTUM AND LOCAL BACILLI. Meta Oelze-Rheinboldt, Dermat. Wchnschr. **76**:438 (May 19) 1923.

In opposition to Lipschütz, the author feels that the diagnosis of these lesions on the grounds of bacteriologic findings is most uncertain, since these same organisms may be present in great numbers in the absence of any ulceration.

CONCLUSIONS AFTER THE FIRST DECADE OF THE COMBINED TREATMENT OF SYPHILIS. A. Jordan, Dermat. Wchnschr. **76**:453 (May 26) 1923.

The author gives a statistical review of his 1,120 cases, and concludes that the treatment has been most effective, even with a conservative dosage.

REFLECTIONS AGAINST THE USE OF ARSPHENAMIN MIXED INJECTIONS. Alois Memmesheimer, Dermat. Wchnschr. **76**:459 (May 26) 1923.

Three cases are cited in which the employment of mercury and arsenic mixed in the same injection was fraught with failure: In the first, the course of early syphilis was not effectively checked; in the second case, severe mercurial stomatitis appeared; and in the third, syphilitic ulcerations were not influenced, whereas the institution of treatment with neo-silver arsphenamin brought about quick improvement.

CONTRIBUTION CONCERNING THE MORPHOLOGY AND BIOLOGIC RELATIONS OF THE YEAST CAUSING EROSIO INTERDIGITALIS BLASTOMYCETICA. Samson, Dermat. Wchnschr. **76**:473 (June 2) 1923.

This yeast was compared with brewery yeasts and with the organism of thrush, and it could not be differentiated macroscopically nor by microscope, on plain or glucose agar. In short, a constant differentiation between the three bacteriologically does not seem possible to the author at present. Therefore, the matter of nomenclature is not yet definitely settled, and cannot be until a precise botanical classification shall have been established.

CONCERNING THE PATHOGENESIS OF MILIARIA CRYSTALLINA. C. Kreibich, Dermat. Wchnschr. **76**:497 (June 9) 1923.

The author believes that this eruption is due to the obstruction of the sudoriferous ducts, brought about by heat coagulation of the stratum corneum, which has been macerated with sweat. The necessary heat is furnished either

by the organism, as the accompaniment of a fever, or externally, as by warm applications or ultraviolet light.

THE SUPERIORITY OF NORMAL SALT SOLUTION OVER PHYSIOLOGIC SODIUM CHLORID SOLUTION SHOWN BY BIOLOGIC RESEARCH. Fritz Lauerbach, Dermat. Wchnschr. **76**:498 (June 9) 1923.

In a solution containing the salts of blood serum in normal concentration, *Spirochaeta pallida* retained its motility as long as 132 hours, as compared with a maximum period of 120 hours when sodium chlorid solution was used.

THE SUPERFICIAL TRICHOPHYTOSIS. Felix Harry, Dermat. Wchnschr. **76**:500 (June 9) 1923.

The author reports having found *Trichophyton rosaceum* in superficial scalp lesions of three children, aged 8, 9 and 12 years. He also describes a case presenting plaques of eczema marginatum, from which *Trichophyton gypseum* was recovered, and concludes that the clinical appearance of a lesion does not always indicate with certainty the nature of the causative organism.

SYPHILIS AND BISMUTH. J. Schubert, Dermat. Wchnschr. **76**:503 (June 9) 1923.

The most serious untoward results are the headache, cardiac palpitation and other neurologic manifestations, especially after the use of the soluble preparations. The drug seems better than mercury, but inferior to arsenic, and its effect on the Wassermann reaction is disappointing.

CONCERNING THE BISMUTH THERAPY OF SYPHILIS. G. Giemsa, Dermat. Wchnschr. **76**:523 (June 16) 1923.

The author, having tested the toxicity and ascertained the chemotherapeutic index of various bismuth compounds in aqueous solution by intravenous and intramuscular injection in guinea-pigs, has selected the drug with the most favorable index, which he has designiated "Bi 5." The relative toxicity of this preparation being surprisingly low, he feels that it should be widely used, with perhaps a few minor modifications and possibly the employment of an oily vehicle for intramuscular use.

THE IRRITATING PROPERTIES OF THREE COMMON POWDERS. Willy Engelhardt, Dermat. Wchnschr. **76**:537 (June 23) 1923.

Two talcum powders and one powder containing 2 per cent. salicylic acid in zinc oxid and talcum were used during a period of three months over all or part of the skin surface of many patients, with and without dermatoses. Their irritating power was slight, some transient irritation having appeared in 0.6 per cent. of the cases from the use of the salicylic and the coarser talcum powder, and in only 0.2 per cent. when the finer talcum was employed.

ARSPHENAMIN ERUPTIONS RESEMBLING LICHEN PLANUS; LICHEN PLANUS; THE LICHENOID DISPOSITION AND SEVERAL CONSTITUTIONAL TYPES OF SKIN. A. Buschke and E. Sklarz, Dermat. Wchnschr. **76**:517 and 540 (June 16 and 23) 1923.

According to the authors, true lichen planus is not an infectious disease but belongs to a group, of which neurodermitis, the lichenoid syphilid and

the lichenoid postarsphenamin eruptions are members. Internal or external factors causing shock to the peripheral or sympathetic nervous system often produce one of these eruptions in a predisposed person. The authors hold that there is a constitutional tendency to this type of eruption, just as to keloid or the keratoses.

CONCERNING THE ANATOMIC EFFECT OF THE INOCULATION TEST OF PONNDORF. HANS KOOPMANN, Dermat. Wchnschr. **76**:557 (June 26) 1923.

With the aid of eight excellent photomicrographs, the author reports the results of his investigations, and his conclusions are as follows:

1. As an expression of the first effect of tuberculin on the rete cells, there is serous exudation, cell vacuolization advancing to vesicle formation in the rete and disintegration of nuclei. These changes appear to be due to the parenteral breakdown of the tuberculin into toxic intermediate products.

2. Depending on the amount of these toxic products, there is a variable degree of secondary non-specific inflammatory changes, reflected in the blood picture and producing reactions either by way of the blood vessels or the lymphatics.

3. Tuberculoid dermal structures may be produced by epidermal inoculation of diluted tuberculin, as a late reaction. In the earlier reaction stages no tuberculous structures are found.

CULTIVATION OF THE DERMATOPHYTONS AND THEIR DIFFERENTIATION BY MEANS OF GERMAN MEDIUMS. O. GRUTZ, Dermat. Wchnschr. **76**:568 (June 26) 1923.

As a German substitute for Sabouraud's medium, the author proposes various combinations of malt and peptone, describing ways of preparation.

SCARLATINIFORM TRICHOPHYTID WITH DYSHIDROSIFORM TRYCHOPHYTON INFECTION. EDMUND RAJKA, Dermat. Wchnschr. **76**:574 (June 26) 1923.

In a woman, aged 37 years, *Trichophyton gypseum* was the offender. An intense flareup and generalized reaction followed the injection of an extract, "Trichosan."

INTERMEDIARY METABOLISM AND SKIN DISEASES. III. URIC ACID. EDWIN PULAY, Dermat. Wchnschr. **76**:577 (June 26) 1923.

The author has made quantitative determinations of the uric acid content of the blood in numerous cases representing seventeen different dermatoses, and he has found it abnormally high in many cases of pruritus and itching eczema. It seems to be increased as an accompaniment of various chronic organic conditions, and the author believes that the uric acid content of the tissues is doubtless also increased and that the resultant irritation and osmotic changes produce itching, redness, swelling and exudation.

OCCUPATIONAL DERMATOSES. OTTO SACHS, Dermat. Wchnschr. **76**:582 (June 26) 1923.

In a long and comprehensive article, the author considers the occupational stigmas, burns, freezing, cauterizations, affections of the sebaceous and sudori-

ferous glands, occupational affections of the nails, toxicodermas and trade eczemas, melanodermas, dermatoses due to exposure to dyestuffs, electric burns and roentgen-ray effects, infectious diseases attendant on occupations, epitheliomas, and the subjects of prognosis, prophylaxis and therapy.

UNDER-DOSING WITH ARSPHENAMIN. H. MUHLPFORDT, Dermat. Wchnschr. **76**:615 (June 26) 1923.

In view of the possibility that the employment of too small doses of arsphenamin may be followed by the occurrence of syphilitic involvement of the central nervous system, and in order to effect the destruction of the largest possible number of spirochetes, the author advises the use of fairly large dosage: an average of 0.6 gm. of neo-arsphenamin in men and 0.45 gm. in women.

ALCOHOL AND VENEREAL DISEASES. VON NOTTHAFFT, Dermat. Wchnschr. **76**:626 (June 26) 1923.

The author contends that there is no relationship between the two.

EXPERIMENTAL MELANOMA OF THE TARRED MOUSE. B. LIPSCHUTZ, Dermat. Wchnschr. **76**:749 (June 30) 1923.

The continued application of tar is often followed by melanoma formation at about the ninth week, especially in gray and black mice. The author recognizes three varieties of these melanomas: the superficial, deep and elevated. The pigment has been definitely identified as melanin by its reactions, but the mechanism of its production under these circumstances has to be worked out.

THE INTERNAL TREATMENT OF ICHTHYOSIS. G. GJORGJEVIC and R. A. PAVLOVIC, Dermat. Wchnschr. **76**:752 (June 30) 1923.

The subcutaneous administration of pilocarpin is recommended, together with the external application of glycerin. Two cases in which the patients were benefited are reported.

A NEW APPARATUS FOR INTRAVENOUS INJECTIONS. J. R. THIM, Dermat. Wchnschr. **77**:841 (July 7) 1923.

The needle, 3 or 4 cm. long, has a grip which is designed to facilitate its introduction into the vein and to make it adaptable for use in the flexures.

CONCERNING THE ORIGIN OF BIRTHMARKS. LEVEN, Dermat. Wchnschr. **77**:873 (July 14) 1923.

According to the author, the common origin of animal markings and human birthmarks lies in the idioplasm, the continuity being due to the phylogenetic relationship between animals and man.

THE RESEARCH SIGNIFICANCE OF HEAD'S ZONES OF IRRITATION IN THE SYMPATHETIC AND SPINAL DOMAINS. WALTER CIMBAL, Dermat. Wchnschr. **77**:885 (July 21) 1923.

The various phases of the subject are considered; also the effect of massage and counterirritation.

A PECULIAR NAIL MYCOSIS IN CHINA (ONYCHOLYSIS TRYCHOPHYTICA). F. Reiss, Dermat. Wchnschr. **77**:891 (July 21) 1923.

A young man, who had had a dermatosis seven years previously, not involving the nails, which had been called "ringworm," presented lesions of three fingernails, which were found to contain trychophyton organisms.

EXPERIENCES WITH A BISMUTH PREPARATION, IN COMBINATION WITH NEO-ARSPHENAMIN, IN THE TREATMENT OF SYPHILIS. C. Gutmann, Dermat. Wchnschr. **77**:861 and 892 (July 14 and 21) 1923.

Intramuscularly, a bismuth preparation was given intensively in combination with intravenous injections of neo-arsphenamin, and the results in numerous cases of primary and secondary syphilis and in two cases of tertiary syphilis were excellent. The effect of this combined treatment on the serologic reaction was most encouraging. Recurrences were lacking. Two patients presented urticarial reactions, in one of which there had also been an erythema following the use of neo-silver arsphenamin, and there was some tendency to the development of stomatitis and slight albuminuria, but these manifestations were transient. Tenderness at the site of injection was common. An oily suspension of the drug was employed for intramuscular treatment. The author also administered the drug, in aqueous solution, intravenously in a few cases, with good results, excepting the occurrence of peculiar oral pains, but he advises against the use of intravenous injections in practice. In primary syphilis he recommends the use of arsphenamin, in combination with mercurial or bismuth preparations.

OBSERVATIONS ON THE USE OF ARSALYT IN SYPHILIS. A. N. Popowa, Dermat. Wchnschr. **77**:920 (July 28) 1923.

This new arsenical drug has been found to be inferior to neo-arsphenamin.

Parkhurst, Toledo, Ohio.

ACNE ROSACEA SYPHILITICA. V. Janovsky, Ceska dermat. **4**:151, 1923.

This is a report of three cases of syphilis in adults with clinical aspects of acne rosacea, which cleared up under antisyphilitic treatment in about nine months. All the cases showed purplish, diffuse infiltrates with dilated capillaries, scattered papules and with all signs of seborrhea. Two other cases presented the picture of acne rosacea simultaneously with gummatous lesions on the face.

LYMPHOGRANULOMATOSIS CUTIS ET CONJUNCTIVAE BULBI. V. Reinsberg and R. Kadlicky, Ceska dermat. **4**:160, 1923.

In a woman, aged 59, the first cutaneous symptoms appeared at the site of revaccination—which did not take—and where the skin remained red and indurated. Three months after vaccination the conjunctival lesions appeared, followed by dissemination of papules all over the body. Two and a half years later, when first seen, the patient presented: (1) a striking unilateral enlargement of cervical glands; (2) symmetrical, flat, brownish livid tumors of gelatinous appearance on the bulbar conjunctiva with posterior synechiae in the left eye; (3) a monomorphous skin eruption consisting of papules and tubercles, slightly raised, soft, semitransparent, brownish and bluish red, dis-

crete and follicular in location on the extremities, confluent on the face and shoulders; (4) a slight infiltration of the right apex and a strongly positive Pirquet reaction (bullous). Koch's bacilli were not found in the tissues, and experimental rabbit inoculation in the anterior chamber of the eye was negative after two months; (5) negative Wassermann reaction, negative blood picture except for a light leukopenia; (6) histologic changes in the skin, glands and conjunctiva were uniform and typical. The diagnosis was mainly based on these findings: There were deposits of granulation tissue composed of large and small lymphocytes, fibroblasts, plasma cells, eosinophils and giant cells, with centrally located nuclei; bundles of connective tissue appeared separated, the cells rarified; elastic tissue and skin glands had disappeared.

Local medicinal and roentgen-ray treatment caused no change in the appearance of lesions.

CONCERNING THE EFFECT OF OXYGEN ON SKIN CAPILLARIES. G. Haggqvist, Ceska dermat. **4**:172, 1923.

While carbonic acid bath will cause a dilatation of skin capillaries and redness of the skin, a solution of oxygen (such as 10 per cent. solution of hydrogen peroxid) brings on vasoconstriction and pallor of the skin. The author believes that this phenomenon is a result of direct exchange of gases in the capillaries of the skin. To make use of this vasoconstricting effect of oxygen, Almkvist is experimenting with hydrogen peroxid ointment in the treatment of mercurial and arsenical dermatoses.

A CASE OF PLURIGLANDULAR SYNDROME WITH CUTIS VERTICIS GYRATA. Schwank, Ceska dermat. **4**:177, 1923.

The patient, 35 years old, married, with no children, was born with a papular, itchy eruption which persisted throughout life, improving but never completely disappearing in summer. Signs of cutis verticis gyrate were also noticed in early childhood. The eruption resembled prurigo. The skin of the upper extremities on the extensor side was rough, thickened, with exaggerated markings, and with numerous excoriations, fissures and pustules; it was pigmented and showed scars from healed lesions. On the flexor surfaces the skin appeared normal, except for an occasional pink papule. The skin of the body was soft, pliable, yellowish and devoid of hair. The exanthem rapidly disappeared under thyroid extract. A general examination disclosed an interesting syndrome analyzed by the author as follows: (1) Signs of hypogenitalism, hypoplasia of testicles, prostate and seminal vesicles, absence of regional hair, with well developed hair of the scalp, asexual type of skeleton, etc.; (2) hypothyroidism—signe du sourcil, increased sugar tolerance, decreased protein elimination, effect of thyroid on disappearance of exanthem; (3) hyperfunction of hypophysis—polyuria, acromegalidismus; (4) persistence of thymus—dulness on percussion, hyperplasia of lymph glands; (5) hyposuprarenalinemia—lack of mydriasis after epinephrin and epinephrin glycosuria.

BACTERIOLOGIC DIAGNOSIS OF RHINOSCLEROMA. J. Kabelik, Ceska dermat. **4**:188, 1923.

During the last two and one-half years, the author isolated and cultivated eight strains of *Bacillus rhinoscleromatis Frisch* on a modified Buschholz medium (bouillon with 0.5 per cent. agar, 1 per cent. glucose and enough tinc-

ture of litmus [Kahlbaum] to color the medium violet blue, after neutralization with soda to give it a slightly alkaline reaction). After twenty-four hours—and there is practically no change for the next twenty days—the medium becomes red, and there is no gas formation, no loss of color. *Bacillus rhinoscleromatis* is, therefore, characterized by acid formation and the absence of gas and reduction. Abel-Lowenberg's *Bacillus ozenae* shows the closest cultural resemblance but forms gas, and in older cultures shows a trace of reduction. These characteristics are more marked in cultures of Friedländer's pneumobacillus. The fermentation is especially intense with *B. lactis-aerogenes*. *B. mucous-capsulatus* does not form gas in glucose medium, but shows traces of acid and reduction, slowly spreading from the top of the medium. *B. rhinoscleromatis* forms glassy, transparent colonies. It is very sensitive to tartar emetic; a solution of 0.5 per cent. and with some strains even 0.005 per cent. prevents its growth. The author is giving tartar emetic a therapeutic trial. Although the results seem undeniable, it is too early to draw definite conclusions.

DERMATOSCOPY OF NORMAL SKIN, EFFLORESCENCES OF SOME SKIN DISEASES AND CHANGES FOLLOWING ULTRA AND ROENTGEN RAYS. A. Novak, Ceska dermat. **4**:201 and 244, 1923.

The dermatoscopic study of normal and diseased skin concerns mainly variations in the number, size, shape and distribution of skin capillaries, deposit of pigment, transparency of skin layers depending on their thickness and succulence, condition of skin markings, etc. Individual variations are important. From the practical standpoint, dermatoscopy may be most valuable when used to ascertain the degree of sensibility of the skin toward roentgen rays and violet rays, especially in cases of repeated exposure. Macroscopically, an apparently normal skin may reveal, when examined with a dermatoscope, a considerable degree of capillary dilatation and other signs of irritation.

INFLUENCE OF ROENTGEN RAYS ON SKIN CAPILLARIES. Karel Gawalowski, Ceska dermat. **4**:211, 1923.

Modern physiology attributes a double function to the capillaries, namely, circulating of the blood and the secretion of the lymph. Both functions are affected by roentgen rays. In discussing the circulatory changes, the well-known "early" reaction, a single vasodilatation and the genuine reaction following a definite latency, the author raises the disputed question of varying sensibility of capillaries to roentgen rays. The clinical experience seems to indicate that the condition of the capillaries does not always determine their greater sensibility, even if cases of exophthalmic goiter, nephritis and diabetes led toward that belief.

The secretory function of the capillaries may be decreased or even completely inhibited by roentgen rays. This fact explains the success of irradiation in cases of some acute weeping eczemas, in dermatitis herpetiformis and infantile prurigo. If small doses of rays control the hypersecretion of lymph, they should arrest the formation of lesions resulting from hypersecretion, as pruriginous papules, bullae of pemphigus and wheals of urticaria. If the cause of hypersecretion persists, the effect of the roentgen ray is, of course, only temporary.

FIXED MERCURIAL EXANTHEMS. KAREL HÜBSCHMANN, Ceska dermat. **4**:233, 1923.

A woman, aged 33, who nine years previously had tolerated well mercurial inunctions, resumed antisyphilitic treatment. Six hours after the first application of mercurial sappocreme, a severe itching developed followed by the appearance of diffuse erythematous patches in both popliteal, cubital and inguinal regions, and soon a vesicular eruption (no ointment was applied to the involved areas). The patient stood the arsenical preparations without untoward effects. To the fourth injection of neo-arsphenamin, 1 c.c. of 1 per cent. solution of an organic mercury salt was added. Six hours later some burning developed in the involved areas. The second attempt at mercurial rub again resulted in erythema and a vesicular rash. Some time later the second addition of the mercury salt to neo-arsphenamin had the same effect as the external application of mercury and even half of the dose (0.005 cm.) was not tolerated. When the skin returned to normal, the patient was given mercury internally. She developed difficulty in swallowing, and the skin reaction reappeared in previously affected areas, and new areas developed.

The exanthem always had the same location, only with repeated attacks new areas became involved in a definite order. It became fully developed in from four to six hours and lasted from four to six days, disappearing under liquid powder with slight desquamation and pigmentation.

The author considers his case as a pure form of a fixed mercurial exanthem.

SPINKA, St. Louis.

Society Transactions

ST. LOUIS DERMATOLOGICAL SOCIETY

Regular Meeting, May 16, 1923

JOSEPH GRINDON, M.D., *Presiding*

A CASE OF GRANULOMA PYOGENICUM. Presented by DR. NORMAN TOBIAS.

R. H., aged 2½ years, had had the present condition for six months. The lesion began as a small "pimple" on the back of the neck, and following irritation, a lesion similar to the present one appeared. One week ago this scaled off, and the present growth appeared. At presentation the lesion consisted of a dark red, pedunculated tumor, covered with thin crusts and projecting at right angles from the surface of the skin.

DISCUSSION

All present concurred in the diagnosis of granuloma pyogenicum.

DR. LAVENDER (Cincinnati) inquired what treatment should be given in such a case.

DR. TOBIAS replied that the tumor should be removed by cautery excision, care being taken to reach the deeper layers of the skin in order to prevent recurrence.

DR. GRINDON said that he had found most of the methods recommended in the literature unsatisfactory, even deep excision with the galvanocautery sometimes failing. He considered roentgen-ray treatment more satisfactory than any other, and much less disturbing to the patient.

DR. WEISS said that he had had a number of cases with lesions in accessible locations, especially those occurring on the lips, which he had treated with tincture of iodin, with good results.

A CASE FOR DIAGNOSIS. Presented by DR. RICHARD KRING.

P. H., a blacksmith, aged 30, married, presented a lesion of five years' duration, consisting of dry, scaly patches on the scalp, forehead, arms, chest and thighs; also an irregular, scaly patch on the right leg near the knee and a few patches on the flexor surfaces of the forearms, with well defined borders, in process of involution, without scarring. The Wassermann test was negative; urinalysis was negative.

DISCUSSION

DR. WEISS said that the condition looked more like lichen planus than any other lesion, although he had thought of psoriasis. He hesitated to give a dogmatic opinion without further observation. Some of the lesions resembled parapsoriasis; one or two were almost typical of lichen planus; the patch on the leg looked like hypertrophic lichen planus.

Dr. Tobias said he thought the lesion on the leg was hypertrophic lichen planus, but he said he could not yet make a diagnosis of the lesions on the rest of the body.

Dr. Lavender said he was inclined to believe that the patch on the leg resembled lichen planus hypertrophicus. He thought the other lesions on the body could be put in the general class of parapsoriasis, resembling psoriasis or lichen planus hypertrophicus. He felt it would be interesting to observe the case further.

Dr. Brockelmann was of the opinion that the patch on the leg was lichen planus, while the other patches resembled psoriasis.

Dr. W. D. Davis said the lesion on the right leg appeared to be lichen planus hypertrophicus. He agreed with Dr. Weiss in saying that the lesions were suggestive of psoriasis, particularly the lesions on the left leg. The lesions on the forehead appeared to be seborrheic dermatitis, the other lesions over the body suggesting psoriasis.

Dr. Conrad remarked that so far all present agreed that the lesion on the leg was probably hypertrophic lichen planus, but that some of the lesions, especially that on the left leg, looked like psoriasis, although there was no punctate bleeding on scraping of the scales. It more nearly resembled parapsoriasis than the other diagnoses suggested.

Dr. Engman remarked that he had not seen any lichen planus papules; that the condition looked to him more like psoriasis.

Dr. Greiner said that he had seen the case twice and that the lesions had undergone a change, especially those on the forehead and arms, which were definitely beginning to clear. He thought it was a typical case of parapsoriasis; he excluded lichen planus, because he could not find any typical lesion of that character.

Dr. Grindon inquired whether or not Dr. McIntosh had found any lesions resembling lichen planus.

Dr. McIntosh replied that the scalp lesions were like seborrheic dermatitis, and that he did not think it possible to make a positive diagnosis of lichen planus, or psoriasis or parapsoriasis. The growth, in the nature of things, and if the patient were a little older, would suggest mycosis fungoides, which might be reckoned with until ruled out by the histology of the case. He had seen no typical lichen planus lesions.

Dr. Grindon observed that he saw some lesions that were quite like those of lichen planus on the right flexor surfaces, and again some that were typically lesions of parapsoriasis, and that he would make a diagnosis of parapsoriasis. As to the diagnosis of the lesion on the right leg, he believed that whatever it might have been originally, it was evidently pruritic, the consequent scratching causing a lichenification.

TWO CASES OF FOLLICULITIS ULERYTHEMATOSA RETICULARIS IN SISTERS. Presented by Dr. Richard S. Weiss.

Two sisters, aged 24 and 16, respectively, were presented on account of lesions on the face said to be of about five months' duration. There was no history of any similar condition in the family. On presentation there was noted a reticulated, varioliform scarring of both cheeks and the nose. The intervening areas of skin were apparently slightly raised and somewhat erythe-

matous. These two cases seemed to correspond to those described in 1918 by McKee and Parounagian under the name of "folliculitis ulerythematosa reticularis." They differed in that no comedones were noticed, nor was the disease, as described by McKee and Parounagian, a familial one.

DISCUSSION

DR. GRINDON said that these cases recalled to his mind a picture of folliculitis maculosa atrophica.

DR. WEISS said that it was at Dr. Engman's suggestion that he looked up the case described by MacKee and Parounagian in 1918, and found that the cases presented were almost an exact duplicate except for the presence of comedones. They more nearly corresponded, however, to the case described by Heidingsfeld, which he called atrophia maculosa cutis. However, MacKee and Parounagian in their article included this type with their cases. Dr. Weiss said he did not know whether the presence of comedones was merely accidental. If the names proposed by MacKee were accepted, these cases would be included in the same class.

A CASE FOR DIAGNOSIS. Presented by DR. R. S. WEISS from DR. ENGMAN'S Clinic at Washington University.

A white woman, aged 53, had a lump removed from the right breast about four years ago, recovery being uneventful and apparently complete. Eleven months ago a radical breast amputation for cancer was performed. At presentation there was a hypertrophic scar on the right side. Superior to the scar, on the skin of the thorax, was an irregular area, about 15 by 15 cm., of erythematous and papular dermatitis, with here and there a suggestion of telangiectasia.

DISCUSSION

DR. WEISS said that when the patient was referred to the dermatologic service from the surgical department, he immediately thought of a possible roentgen ray burn, but on close inquiry and looking up the history, there was no record of roentgen ray exposure. He then brought the patient to Dr. Sherwood Moore, whose opinion was that the condition was a carcinomatous extension in the superficial lymphatics. Dr. Weiss asked for the opinion of those present in regard to the best method of treatment.

DR. ENGMAN suggested roentgen-ray therapy.

DR. GRINDON said that one natuarlly would think of carcinoma lenticulare, but that it reminded him of the case of a woman who had undergone an amputation of the breast for carcinoma. There was beginning recurrence at the scar. A toxic erythema developed, forming a ring around the lesion. This ring slowly spread as an ever widening circle, until after some months it was about 10 inches (25.4 cm.) in diameter and broken in places.

DR. BROCKELMANN said he thought it might be a carcinoma en cuirasse, or Paget's disease.

DR. GRINDON said he had never known Paget's disease to develop at a number of distinct points.

DR. W. D. DAVIS remarked that he had had the opportunity recently to observe a rather parallel case with a surgeon (Dr. L. A. Will) with a view to diagnosis, which was probably more advanced than the case presented. The biopsy showed carcinoma.

A CASE OF LUPUS VULGARIS DISSEMINATUS. Presented by Dr. Richard Kring.

E. B., aged 18, presented lesions on the right upper arm and left forearm and on the back of the neck with several scars on the lower limb of ten years' duration, no treatment having been given in the past six years. The lesions were circinate in character, consisting of small papules with no infiltration or pruritus, and without ulceration or discharge. The scars were soft, pliable and of tissue-paper character. The urinalysis and Wassermann test were negative.

DISCUSSION

Dr. McIntosh said he thought it looked like lupus vulgaris, in spite of the distribution. He thought he had seen nodules in the lesion, but since the Wassermann test was negative, he thought it must be a tuberculous lesion.

Dr. Grindon inquired whether Dr. McIntosh had ever seen syphilitic tissue present the character of translucence seen here.

Dr. McIntosh replied that in all these cases the presence of syphilis was considered.

Dr. Grindon added that the lesions were brownish red, compared by Hutchinson to that of apple butter.

Dr. Greiner said he believed it a case of lupus vulgaris.

Dr. Weiss said that his diagnosis was lupus vulgaris, but that he had never seen a case with such extensive and widespread distribution. The few cases he had observed in the clinic had been chiefly confined to smaller areas that would proceed by extension. They began at some central point and spread peripherally. This patient apparently had received multiple inoculations.

A CASE FOR DIAGNOSIS. Presented by Dr. Richard Kring.

L. R., a white woman, aged 48, married, having four children living, three having died young, gave a history of stiffness of the hands and legs lasting for a day or two, then disappearing, this condition having been present for twelve years. Six years ago she had suffered from pains in the upper epigastric region with headache, dizziness and "stomach trouble." She was informed at that time that she had diabetes. Following the death of her husband a year ago, the diabetic condition increased, with urination every five minutes during the day, decreasing with rest and sleep. There was persistent "stomach trouble" and obstinate constipation. On presentation the patient appeared very flushed. There was a systolic murmur in the aortic area; the pulse was 74 and well sustained. There were varicose veins in the legs with pruritus. The skin presented an erythematous condition, the face, cheeks, nose and upper part of chest being red, dry and slightly scaly at times. Urinalysis showed a definite trace of sugar.

DISCUSSION

Dr. Robert H. Davis said that he recalled in this connection the case of an old lady whom he had seen about ten years ago with a similar skin condition, who also had diabetes. She had erythema on the face which would remain for a time and then disappear, involving the nose and cheeks in the usual position of lupus erythematosus. The diagnosis at the Jewish dispensary was lupus erythematosus of the vascular type. Lately he had seen a case of lupus erythematosus of the vascular type of intermittent character, even though there

appeared to be considerable thickening. In the present case the lesions did not seem to be so stationary in that the patient had had periods of relief, but in spite of this fact lupus erythematosus could not be ruled out.

DR. GRINDON asked whether there was any sign of atrophy.

DR. DAVIS replied that there had not been.

DR. CONRAD said that he had thought of erythema of the polycythemia vera type.

DR. GREINER remarked that the lesions of the mouth were not red as in polycythemia vera.

DR. W. D. DAVIS said that he had thought of polycythemia vera. The patient had said that the condition was aggravated by exposure to the wind and to various climatic changes.

DR. LAVENDER said that the line of demarcation on the upper part of the chest, also the confluence of the lesions, showed exposure to the weather, and that this should be considered under the general class of ordinary rosacea.

DR. WEISS related having seen a case diagnosed as polycythemia vera in Chicago, but this case could not be so diagnosed without a blood count. Such a diagnosis could be suggested, but the necessity of a blood count was apparent. He felt, however, that there was a peculiar thing about the case presented and that was the absolutely clean-cut limitations, to the "chemise-line," and that not only suggested polycythemia but also some external influence that would produce a dermatitis and a dilatation of the blood vessels.

DR. GREINER said he regretted that a blood count had not been made. He said that he had not thought of the diagnosis of polycythemia because the erythema seemed to increase or decrease with the reduction of the sugar content. If the percentage of sugar were high, the erythema increased; if it were low, the erythema improved. His diagnosis was toxic erythema due to diabetic conditions.

DR. TOBIAS inquired whether toxic erythema could produce telangiectases.

DR. GRINDON replied that so far as he knew, it could not.

DR. ENGMAN suggested vasomotor instability.

DR. GRINDON said that Dr. Lavender's suggestion of rosacea was a good one.

DR. KRING suggested that toxic erythema might be due to the variation of sugar in the blood; therefore, to some fault in metabolism.

A CASE FOR DIAGNOSIS. Presented by DR. W. D. DAVIS.

J. B., aged 9 months, a breast-fed infant, had had the present eruption for five weeks. The mother had been taking a popular remedy twice weekly for the past twelve years for the relief of constipation, this remedy containing aloin, strychnin, belladonna and ipecac. One week prior to the development of the present eruption, the child had had an attack of measles, which cleared up in two or three days, during which time it was given medicine containing paregoric by the family physician, and also a solution of ammonium chlorid. The present lesions appeared rapidly on the cheeks, the backs of the hands, outer surfaces of the forearms, and later on the flexors of the thighs. On the forehead was an eruption of small, whitish, glistening acuminate papules, the lesions in the other areas consisting of discrete and aggregated yellowish pink hard nodules, moderately pruritic, with reddish areolas of varying sizes. On the dorsum of the hands, the lesions had a tendency to coalesce, being of a verrucous character.

DISCUSSION

DR. TOBIAS said that the lesions at first suggested a drug eruption, looking more like a bromid eruption than anything else, but that a positive history could not be obtained from the child's mother except that she had been taking "cathartic pills" for twelve years, and during the attack of measles, the baby had been given paregoric and ammonium chlorid.

DR. LAVENDER remarked that he had in mind in this connection two cases, one of which due to bromid in an infant resembled this picture very much; the second case being in an adult of 25 or 26 years of age, with a history of ingestion of belladonna. The lesions were papuloverrucous. On remission of the drug, they cleared up in ten days or two weeks, but left a slight pigmentation which lasted several months after involution of the lesions. This was undoubtedly a drug eruption.

DR. W. D. DAVIS said that it was the opinion of the clinicians who had examined the case that it was a drug eruption, the exact nature of which they were not absolutely certain. It resembled very much a case presented some time ago of an infant who developed a bromid eruption from ingestion of the mother's milk, the mother having given a history of ingestion of bromid.

DR. TOBIAS added that there was no definite history of bromid ingestion by the infant and that the mother's history in such cases could not always be relied on, as from the first a bromid eruption had been suspected.

DR. ROBERT H. DAVIS also said he was of the opinion that this was a drug eruption, but the only drug that could be settled on was the belladonna in the lepactic pills. He said that he had never seen a belladonna eruption like that described by Dr. Lavender.

DR. ENGMAN said it had been his experience that belladonna and such drugs brought on erythematous or scarlatinform eruptions, whereas drugs like iodids produced different lesions. The lesions under discussion did not look like drug eruptions, but like posterythematous tuberculids. They sometimes occur after measles, within a week or two weeks.

DR. KRING inquired whether it could not be possible to have an eruption from ingestion of ammonium chlorid on account of the chemical similarity between the ammonium chlorid and sodium or potassium bromid. He said the belladonna eruption usually produced a red macular rash.

DR. SMITH said the condition looked to him like a bromid eruption.

DR. GRINDON said that while he took Dr. Engman's consideration to heart, he had not been converted to his opinion, that he believed the lesion was a bromid eruption in spite of the fact that there was no history of the use of that drug.

A CASE FOR DIAGNOSIS. Presented by DR. W. D. DAVIS.

L. E., a woman, aged 26, married, had been under treatment for carcinoma of the cervix since February, 1922, having received several radium applications, the last one in July, 1922. In August and September, 1922, several deep therapy treatments had been given to the pelvic areas, following which the patient had had several uterine hemorrhages and severe pelvic pain for which opiates (pyramidon and codein) were administered. In November, 1922, she appeared at the clinic with an irregular, large, angular, raw, acute, vesicular area of dermatitis over the right scapula, with a few outlying erythematous

lesions. Improvement gradually occurred until March, 1923, when only an area the size of a quarter remained unhealed. However, she reappeared at the clinic about a month later with a recurrence of the dermatitis more severe than formerly, involving the entire right shoulder and extending to the left of the spine. She was placed on a 5 per cent. anesthesin ointment, as she said the Lassar paste had burned her. She improved somewhat, but returned two weeks later with a spreading of the erythema and vesiculation over the entire back down to the lumbar region. Since admission to the hospital, the condition had healed with soothing remedies until only a small area of hypertrophic granulations remained.

Dr. W. D. Davis said that carcinoma of the cervix for which the woman had originally been treated had, in his opinion, no bearing on the present condition. On admission to the dermatologic clinic the woman presented an angular, erythematous, excoriated lesion over the right scapular region which she could conveniently reach, and it was at that time incontestably a case of dermatitis factitia. She received a great deal of treatment (Lassar's paste) which modified the appearance of the lesion, which was practically healed, quite materially. Later she returned to the clinic with acute exacerbations, the dermatitis being so severe that she was admitted to the hospital for treatment. The lesions over the right scapular areas appeared as if she had applied an irritating salve. She was in great pain which was controlled by opiates, and under anesthesine and Lassar's paste the woman's condition cleared until she merely presented granulating areas about the size of a quarter. At presentation she was very much improved. In our opinion it was a case of dermatitis artefacta or dermatitis factitia.

Dr. Smith inquired whether dermatitis factitia was the same as neurotic excoriation, since it seemed to occur on the same type of person.

Dr. Grindon replied that he did not think it was, as dermatitis factitia implied the idea of purposeful intention on the part of the patient.

A CASE FOR DIAGNOSIS. Presented by Dr. R. H. Davis.

F. A., aged 8, appeared at the clinic about two months ago with a generalized pruritic papular eruption of three days' duration, with lesions on the penis and buttocks, which was diagnosed as scabies, and a localized eczematoid vesicular eruption of three years' duration on the feet, which appeared to be an epidermophytosis. The generalized eruption, however, did not yield to active specific treatment and new papulovesicular lesions occurred from time to time so that a diagnosis of generalized epidermophyton infection was made. About five weeks ago, groups of poorly defined vesicles appeared on the elbows, and nape of the neck, suggesting dermatitis herpetiformis. Two weeks later the lesions on the nape of the neck and flexure of the elbow assumed an appearance of flat-topped, shiny pruritic pale red papules, somewhat grouped and almost like lichen planus. The eczematoid lesions on the feet gradually improved under local treatment. The child had received solution of potassium arsenite (Fowler's solution) since April 23.

DISCUSSION

Dr. Engman suggested a diagnosis of lichen planus.

Dr. Grindon inquired whether the lesions about the elbow resembled lichen planus.

Dr. Tobias replied that when he saw the child two weeks previously, the lesions on the flexure of the elbow and the back of the neck were those of lichen planus.

Dr. W. D. Davis said that his impression was that the condition was lichen planus, the lesion on the foot resembling an epidermophytosis.

Dr. Grindon agreed that the lesions on the foot were of a different character than those on the body.

BERLIN DERMATOLOGICAL SOCIETY

Session of Nov. 14, 1922

Dr. Bruhns, *in the Chair*

BILATERAL MAL PERFORANS CURED BY ARSPHENAMIN. Dr. Bruhns.

A patient suffering from tabes developed symmetrically located mal perforans below the big toe on either foot. Antisyphilitic treatment effected a complete cure within four weeks. In the discussion, Dr. Kleinschmidt said that he had cured similar ulcers with roentgen rays which had withstood antisyphilitic treatment.

URTICARIA PIGMENTOSA IN TWINS. Dr. Rosenthal.

Two boys, aged 5 months, developed typical lesions. In the discussion, Dr. Arndt said that the presence of urticaria pigmentosa in twins justifies the classification of this disorder with the group of congenital malformations.

LEUKODERMA IN CHILDREN WITH ACQUIRED SYPHILIS. Dr. Langer.

Leukoderma has hitherto only been observed twice in children with congenital syphilis.

ERYTHEMA EXSUDATIVUM MULTIFORME FOLLOWING A FISH MEAL. Dr. Rosenthal.

In the discussion, Dr. Heller said that this case is evidence of the toxic nature of this disorder.

ERYTHEMA INDURATUM WITH CONCOMITANT TUBERCULIDS ON THE MUCOSA. Dr. Arndt.

In addition to typical erythema induratum nodules on the lower extremities, the patient had a strong positive Pirquet reaction. The numerous pinhead sized grayish nodules on the palate and pharynx were diagnosed as mucous membrane tuberculids.

EXFOLIATIO AREATA LINGUAE ET MUCOSAE ORIS. Dr. Arndt.

A case of lingua plicata in a man, aged 19, with typical exfoliation was presented. This case is remarkable because the mucous membrane of the cheeks and lips was also involved. In the discussion, Dr. Pinkus said that exfoliatio areata of the buccal mucosa is rare.

SILESIAN DERMATOLOGICAL SOCIETY

Session held at Breslau, Nov. 18, 1922

DR. JADASSOHN, *in the Chair*

A CASE OF CIRCUMSCRIBED ARSENIC KERATOSIS. DR. FUCHS.

At the end of her second "course" of antisyphilitic treatment, the patient developed sharply defined, cornified papular eruptions on the hands, which very much resembled ordinary warts. The palms were not involved. Besides the skin alterations, the patient complained of pains in the elbow and shoulder joints. This is a case of arthritis due to arsphenamin medication, a disturbance which was first described by Kuznitzky.

GRANULOMA ANNULARE. DR. BOTHE.

Typical lesions were present on both index fingers and the left ring finger. The tuberculin test was negative. In the discussion, Dr. Jadassohn advised mesothorium application. He also called attention to the negative tuberculin reaction with reference to the doubtful tuberculous nature of the granuloma annulare.

ARSPHENAMIN ERUPTION ESPECIALLY LOCALIZED ON THE SITE OF A PREVIOUS ERYTHEMA SOLARE. DR. SCHNEEMANN.

A patient suffering from an intense erythema solare around the neck and chest developed on these sites, during the course of specific treatment, a pronounced arsphenamin dermatitis, which first remained limited to these areas, and a few weeks later spread over the elbows, knees and face. In the discussion, Dr. Galewsky mentioned a case in which a localized arsphenamin dermatitis was provoked and spread by a diagnostic roentgen-ray application. Dr. Jadassohn reported a case in which ordinary irritation of the skin, due to benzine, caused the first and serious localization of an arsphenamin dermatitis.

REMARKABLE THERAPEUTIC RESULTS WITH STREPTOBACILLUS VACCINE IN A CASE OF ULCUS MOLLE SERPIGINOSA. DR. FREI.

Palm sized ulcers in both genitocrural regions which had developed from chancrous buboes and had withstood all therapeutical measures for two years were completely cured within two months by twenty-two intramuscular injections of a Ducrey bacillus vaccine. Most of the injections caused a rise in temperature. It could not be decided to what extent the fever acted as a curative factor.

BONE ALTERATIONS IN LUPUS PERNIO. DR. MARTENSTEIN.

In a patient aged 47 with lupus pernio of the nose, the roentgenogram of the foot showed circumscribed defects of the bones. Similar observations have been made by Volk, Schaumann, Brock and others in Boeck's sarcoid and lupus pernio. Dr. Martenstein diagnosed the case as either an ostitis tuberculosa multiplex cystica of Juenglung or the spina ventosa multiplex adultorum of Fraenkel. The patient's sister who suffered from Sarcoid of Boeck did not show any bone alterations. The foregoing case is said to be the first one reported in which lupus pernio and sarcoid of Boeck were present in the same family.

Index to Current Literature

DERMATOLOGY

Acrodermatitis Chronica Atrophicans and Its Relation to Scleroderma. F. Wise, New York M. J. **113**:73 (July 18) 1923.

Actinomycosis of the Face. A. Sartory and G. Canuyt, Bull. l'Acad. d. méd. **90**:65 (July 10) 1923.

Addison's Disease, Metabolic Findings in Four Cases of. K. Gyotoku and M. Momose, Mitt. a. d. med. Fak. Univ., Tokyo **30**:1 (Dec. 29) 1922.

Addison's Disease, Relation of, to Amyloidosis. M. McCutcheon, Am. J. M. Sc. **2**:197 (Aug.) 1923.

Angiomas, Carbon Dioxid Snow in Treatment of. Lortat-Jacob and P. Legrain, Paris méd. **13**:549 (June 23) 1923.

Autohemotherapy in Local Skin Infections. P. Merklen and F. Hirschberg, Bull. et mém. Soc. méd. d. hôp. de Paris **47**:1081 (July 6) 1923.

Cancer, Water, or Gangrenous Stomatitis Treated with Roentgen Ray. J. W. Cathcart, Am. J. Roentgenol. **10**:561 (July) 1923.

Carbon Dioxid Snow in Treatment of Angiomas. Lortat-Jacob, and P. Legrain, Paris méd. **13**:549 (June 23) 1923.

Chaulmoogra Oil, Treatment of Leprosy with Dean's Derivatives of. G. L. Hagman, China M. J. **37**:568 (July) 1923.

Cheilitis, Chronic Actinic. S. Ayres, Jr., J. A. M. A. **81**:1183 (Oct. 6) 1923.

Chickenpox, Differential Diagnosis of. W. McC. Wanklyn, Brit. M. J. **2**:106 (July 21) 1923.

Dermatitis, Match and Match-Box. O. H. Foerster, J. A. M. A. **81**:1186 (Oct. 6) 1923.

Dermatologic Cases Treated by Roentgen Rays, End-Result Study of. C. G. Lane, Boston M. & S. J. **189**:174 (Aug. 2) 1923.

Dermatoses, Allied, and Eczema, Relationship of Excess of Uric Acid in Blood to. J. F. Schamberg and H. Brown, Arch. Int. Med. **32**:203 (Aug.) 1923.

Eczema and Allied Dermatoses, Relationship of Excess of Uric Acid in Blood to. Schamberg and H. Brown, Arch. Int. Med. **32**:203 (Aug.) 1923.

Eczema, Baker. A. R. Tankard, Lancet **2**:279 (Aug. 11) 1923.

Epithelioma Contagiosum of Fowls, Relation of Faulty Nutrition to Development of. R. McCarrison, Brit. M. J. **2**:172 (Aug. 4) 1923.

Erysipelas. D. Herderschée, Nederlandsch Tijdschr. v. Geneesk. **1**:2367 (June 2) 1923.

Eunuchoid Infantilism with Partial Giant Growth. M. Letulle and Weismann-Netter, Ann. méd. **14**:19 (July) 1923.

Furuncles and Tuberculosis, Connection Between. G. Grossi, Riforma med. **39**: 630 (July 2) 1923.

Furuncle of the Face, Progressive. W. Rieder, Zentralbl. f. Chir. **50**:1024 (June 30) 1923.

Gangrenous Stomatitis or Water Cancer, Treated with Roentgen Ray. J. W. Cathcart, Am. J. Roentgenol. **10**:561 (July) 1923.

Granuloma, Coccidioidal. Report of Cases. R. G. Taylor, Am. J. Roentgenol. **10**:551 (July) 1923.

Granuloma Inguinale. O. M. Gruhzit, Am. J. Trop. Med. **3**:289 (July) 1923.

Iodin in Treatment of Malaria, Kala-Azar and Smallpox. J. J. A. Brachio, Indian M. Gaz. **58**:311 (July) 1923.

Leprosy, Treatment of. L. S. Huizenga, China M. J. **37**:567 (July) 1923.

Leprosy, Treatment of, with Dean's Derivatives of Chaulmoogra Oil. G. L. Hagman, China M. J. **37**:568 (July) 1923.

Measles, Clinical Observations on. P. Widowitz, Arch. f. Kinderh. **72**:274 (May 19) 1923.
Measles in New Bedford. H. G. Rowell, Boston M. & S. J. **189**:101 (July 19) 1923.
Measles, Etiology of. G. Caronia, Pediatria **31**:801 (Aug. 1) 1923.

Radium Skin Doses, Simple Monogram for Determination of. E. H. Quimby, Am. J. Roentgenol. **10**:574 (July) 1923.
Roentgen Rays, End-Result Study of Dermatologic Cases Treated by. C. G. Lane, Boston M. & S. J. **189**:174 (Aug. 2) 1923.

Scarlet Fever, Experimental. G. F. Dick and G. H. Dick, J. A. M. A. **81**:1166 (Oct. 6) 1923.
Scleroderma, Acrodermatitis Chronica Atrophicans and Its Relation to. F. Wise, New York M. J. **113**:73 (July 18) 1923.
Sclerosis of the Face After Typhoid. A. A. Ugón, Arch. Latino-Amer. de Pediat. **17**:465 (June) 1923.
Skin and Immunity, Relations Between. Müller, Deutsch. med. Wchnschr. **49**: 754 (June 8) 1923.
Skin Doses, Radium, Simple Monogram for Determination of. E. H. Quimby, Am. J. Roentgenol. **10**:574 (July) 1923.
Skin Infections, Local, Autohemotherapy in. P. Merklen and F. Hirschberg, Bull. et. mém. Soc. méd. d. hôp. de Paris **47**:1081 (July 6) 1923.
Skin Lesions, Trophic, Pathogenesis of. Lévy-Franckel and Juster, Presse méd. **31**:660 (July 28) 1923.
Skin, Sensory Activities for Touch and Temperature. D. Waterston, Brain **46**:200 (July) 1923.
Smallpox and Chickenpox, Differential Diagnosis of. W. McC. Wanklyn, Brit. M. J. **2**:106 (July 21) 1923.
Smallpox and Vaccination. J. P. Leake and J. N. Force, J. A. M. A. **81**:1072 (Sept. 29) 1923.
Smallpox, Diagnosis of, by Paul Method. J. M. Scott and C. E. Simon, Am. J. Hygiene **3**:401 (July) 1923.
Smallpox Epidemic of 1882, Recollections of. H. Meijer, South African Med. Rec. **21**:330 (July 28) 1923.
Smallpox, History of Inoculation Against. V. Torkomian, Bull. l'Acad. de méd. **90**:108 (July 24) 1923.
Smallpox, Malaria and Kala-Azar, Iodin in Treatment of. J. J. A. Brachio, Indian M. Gaz. **58**:311 (July) 1923.
Sore, Tropical, and Kala-Azar, Etiology of. B. Blacklock, Lancet **2**:273 (Aug. 11) 1923.
Sprue, New Theory as to Causation of, and Results of Treatment Based Thereon. H. H. Scott, China M. J. **37**:581 (July) 1923.
Stomatitis, Gangrenous, or Water Cancer, Treated with Roentgen Ray. J. W. Cathcart, Am. J. Roentgenol. **10**:561 (July) 1923.

Tar-Treated Animals. V. E. Mertens, Ztschr. f. Krebsforsch. **20**:217 (July 13) 1923.
Tuberculosis and Furuncles, Connection Between. G. Grossi, Riforma med. **39**: 630 (July 2) 1923.

Ulcer, Leg, Principles for Treatment of. E. Clasen, Med. Klin. **19**:947 (July 8) 1923.
Unvaccinated, Menace of the. V. G. Heiser, J. A. M. A. **81**:1070 (Sept. 29) 1923.

Vaccination and Smallpox. J. P. Leake and J. N. Force, J. A. M. A. **81**:1072 (Sept. 29) 1923.
Vaccination in Japan. J. A. M. A. **81**:1102 (Sept. 29) 1923.
Vaccination. Menace of the Unvaccinated. V. G. Heiser, J. A. M. A. **81**:1070 Sept. 29) 1923.

SYPHILOLOGY

Arsenic Derivative, Pentavalent, in Treatment of Syphilis. C. Laurent, Ann. d. mal. vén. **18**:497 (July) 1923.

Arsenical, New, and Bismuth, Experience with, in Treatment of Syphilis. S. Nicolau, Paris méd. **13**:467 (May 26) 1923.

Arsenical Mercurial Treatment of Tabes. J. A. Barré, Bull. méd. **37**:769 (June 30) 1923.

Arsenical Treatment of General Paralysis. R. Targowla, Bull. et mém. Soc. méd. d. hôp. de Paris **47**:645 (May 4) 1923.

Arsenical Treatment, Intramuscular, of Syphilis. R. Rabut, Ann. d. mal. vén. **18**:351 (May) 1923.

Arsphenamin, Effects of, on Pregnant Syphilitics. Pomaret and Benoit, Bull. et mém. Soc. méd. d. hôp. de Paris **47**:699 (May 11) 1923.

Arsphenamin, Hemorrhages After. P. Emile-Weil and Isch-Wall, Presse med. **31**:657 (July 28) 1923.

Arsphenamin, Syphilis Refractory to. M. Jessner, Med. Klin. **19**:857 (June 24) 1923.

Arsphenamin Treatment of Congenital Syphilis. H. Davidsohn, Arch. Latino-Amer. de Pediat. **17**:401 (June) 1923.

Bismuth and New Arsenical, Experiences with, in Treatment of Syphilis. S. Nicolau, Paris méd. **13**:467 (May 26) 1923.

Bismuth in Treatment of Syphilis. A. Galliot, Paris méd. **13**:577 (June 30) 1923.

Bismuth Salts, Treatment of Syphilis by. L. P. Carvell, M. J. Australia **2**:8 (July 7) 1923.

Colloidal Gold and Mastic Reactions in the Cerebrospinal Fluid. C. de Sanctis and D. Pisani, Policlinico **30**:287 (June 1) 1923.

Complements, Simple Method for Obtaining Guinea-Pigs' Blood for. B. S. Levine, J. Lab. & Clin. Med. **8**:696 (July) 1923.

Encephalitis, Latent Syphilitic. Cestan and Riser, Ann. d. mal. vén. **18**:417 (June) 1923.

Erythromelalgia in Two Syphiltics. E. May and P. Hillemand, Bull. mém. Soc. méd. d. hôp. de Paris **47**:1024 (June 29) 1923.

Hemorrhages After Arsphenamin. P. Emile-Weil and Isch-Wall, Presse méd. **31**:657 (July 28) 1923.

Incipient Tabes. P. Morin, Bull. méd. **37**:783 (June 30) 1923.

Intestines, Syphilitic Disease of. R. Bensaude and L. Rivet, Médecine **4**:750 (July) 1923.

Joint Lesions, Multiple, in Tabes. T. Alajouanine, Bull. méd. **37**:771 (June 30) 1923.

Lung, Syphilitic Disease of. E. Sergent and H. Durand, Bull. l'Acad. d. méd. **89**:478 (May 1) 1923.

Medicolegal Importance of Latent Syphilis. L. Desclaux, Bull. et mém. Soc. méd. d. hôp. de Paris **47**:1088 (July 13) 1923.

Mercury. Arsenical Mercurial Treatment of Tabes. J. A. Barré, Bull. méd. **37**: 769 (June 30) 1923.

Neurosyphilis, Early Diagnosis and Treatment of. R. W. Mann, Canad. M. A. J. **13**:582 (Aug.) 1923.

Paralysis, General, Arsenical Treatment of. R. Targowla, Bull. et mém. Soc. méd. d. hôp. de Paris **47**:645 (May 4) 1923.

Paralysis, General, in State Hospital for Mental Diseases. E. M. Furbush, Ment. Hygiene **7**:565 (July) 1923.

Paralysis, General, Problems in. K. Pönitz, München. med. Wchnschr. **70**:729 (June 8) 1923.

Paralysis, General, Treatment of. C. Goria, Riforma med. **39**:609 (June 25) 1923.

Pregnant Syphilitics, Effects of Arsphenamin on. Pomaret and Benoit, Bull. et mém. Soc. méd. d. hôp. de Paris **47**:699 (May 11) 1923.

Prostitution. Necessity for Medical Supervision of Regular Clandestine as Well as of Licensed Prostitution. L. Bizard, Ann. d. mal. vén. **18**:354 (May) 1923.

Skin Diseases and Syphilis, Sodium Tartrobismuthate in Treatment of. Parreiras Horta, Ann. d. mal. vén. **18**:520 (July) 1923.

Sodium Tartrobismuthate in Treatment of Skin Disease and Syphilis. Parreiras Horta, Ann. d. mal. vén. **18**:520 (July) 1923.

Spirochetal Pulmonary Gangrene. B. S. Kline and M. A. Blankenhorn, J. A. M. A. **18**:719 (Sept. 1) 1923.

Spirochetes, Influence of Chilling on. A. Kissmeyer, München. med. Wchnschr. **70**:775 (June 15) 1923.

Spirochetes, Staining of. J. Schumacher, München. med. Wchnschr. **70**:531 (April 27) 1923.

Stomach, Case of Syphilis of. S. F. Weitzner, Am. J. Roentgenol. **10**:537 (July) 1923.

Stomach, Syphilitic Disease of. R. E. Leone, Riforma med. **39**:625 (July 2) 1923.

Superinfection in Experimental Syphilis. Buschke and Kroo, Klin. Wchnschr. **2**:978 (May 21) 1923.

Syphilids, Pigmented, Pityriasis Simulating. J. May, Rev. méd. del Uruguay **26**:141 (April) 1923.

Syphilids, Traumatism Influencing Site of. Halbron and Barthélemy, Ann. d. mal. vén. **18**:526 (July) 1923.

Syphilis, Abortive Treatment of. U. Mullern-Aspegren, Hygiea **85**:421 (May 31) 1923.

Syphilis, Acquired, and Associated Leprosy. L. Babonneix and E. Rivalier, Bull. et mém. Soc. méd. d. hôp. de Paris **47**:1004 (June 22) 1923.

Syphilis, Active, Sixty-Two Years After Infection. H. Boas, Ugesk. f. Læger **85**:443 (June 21) 1923.

Syphilis, Allergy in. P. Gastinel and A. Boutelier, Bull. méd. **37**:897 (July 28) 1923.

Syphilis and Multiple Sclerosis. H. Dufour and Duchon, Bull. et mém. Soc. méd. d. hôp. de Paris **47**:999 (June 22) 1923.

Syphilis and Pregnancy. E. Klaften and W. Kalman, Ztschr. f. Geburtsh. u. Gynäk. **86**:123 (May 8) 1923.

Syphilis and Pregnancy. H. Thaler, Wien. klin. Wchnschr. **36**:287 (April 19) 1923.

Syphilis and Pulmonary Tuberculosis. F. Koester, Ztschr. f. Tuberk. **38**:94 (April) 1923.

Syphilis and Skin Disease, Sodium Tartrobismuthate in Treatment of. Parreiras Horta, Ann. d. mal. vén. **18**:520 (July) 1923.

Syphilis, Arsenic, Mercury or Bismuth in? Gate and Pillon, J. de méd. **4**:313 (May 20) 1923.

Syphilis, Arthralgia in. P. Blum, Bull. méd. **37**:900 (July 28) 1923.

Syphilis at Conception. J. Golay, Ann. d. mal. vén. **18**:337 (May) 1923.

Syphilis, Bismuth in. H. Felke, München. med. Wchnschr. **70**:62 (May 18) 1923.

Syphilis, Bismuth in Treatment of. Barrio de Medina, Siglo méd. **71**:387 (April 21) 1923; Müller et al.: München. med. Wchnschr. **70**:625 (May 18) 1923; A. Galliot, Paris méd. **13**:577 (June 30) 1923.

Syphilis, Case of. E. S. Dupuy, W. Virginia M. J. **17**:525 (June) 1923.
Syphilis, Cerebral, Diagnosis and Treatment of. G. Riddoch, Lancet **2**:1 (July 7) 1923.
Syphilis, Cerebrospinal. J. H. Pleasants, Atlantic M. J. **26**:728 (Aug.) 1923.
Syphilis, Chance of Cure in. Hoffmann and Hoffmann, München. med. Wchnschr. **70**:620 (May 18) 1923.
Syphilis, Congenital. K. Kundratitz, Jahr. f. Kinderh. **101**:251 (April) 1923; C. B. Wilmott, Kentucky M. J. **21**:389 (Aug.) 1923.
Syphilis, Congenital, Arsphenamin Treatment of. H. Davidsohn, Arch. Latino-Amer. de Pediat. **17**:401 (June) 1923.
Syphilis, Congenital, Early Diagnosis of. E. Hofmann, Deutsch. med. Wchnschr. **49**:753 (June 8) 1923.
Syphilis, Congenital, Ecchymosis of Skin in. O. Neumann, Arch. f. Gynäk. **119**:136 (June 21) 1923.
Syphilis, Congenital, Neuroretinitis Resembling Retinitis Pigmentosa Probably Due to. A. C. Lewis, Am. J. Ophth. **6**:585 (July) 1923.
Syphilis, Congenital, Transmission of. F. Salomon, München. med. Wchnschr. **70**:630 (May) 18) 1923.
Syphilis, Congenital, with Ascites, Case of. R. C. Spence and L. C. Tittle. Southern M. J. **16**:512 (July) 1923.
Syphilis During Pregnancy, Tests for. Georgi and Handorn, München. med. Wchnschr. **70**:632 (May 18) 1923.
Syphilis. Evening Antisyphilis Dispensaries. M. Pinard and Rabut, Bull. et mém. Soc. méd. d. hôp. de Paris **47**:939 (June 22) 1923.
Syphilis, Experiences with Bismuth and New Arsenical in Treatment of. S. Nicolau, Paris méd. **13**:467 (May 26) 1923.
Syphilis, Experimental, Arsphenamin in. Plaut and Mulzer, München. med. Wchnschr **70**:623 (May 18) 1923.
Syphilis, Experimental, Bismuth in. Plaut and Mulzer, München. med. Wchnschr. **76**:487 (April 20) 1923.
Syphilis, Experimental, in Monkeys. M. Nicolle, Ann. de l'Inst. Pasteur **37**: 547 (June) 1923.
Syphilis, Experimental, Superinfection in. Buschke and Kroo, Klin. Wchnschr. **2**:978 (May 21) 1923.
Syphilis, Extragenital, Epidemic of. O. Grütz, Deutsch. med. Wchnschr. **49**: 782 (June 15) 1923.
Syphilis, Febrile. A. Lanzenberg, Paris méd. **13**:518 (June 9) 1923.
Syphilis, Febrile, Case of. M. Favre and N. Contamin, J. de méd. **4**:303 (May 20) 1923.
Syphilis, Hereditary, Cerebrospinal Fluid in. O. Tezner, Monatschr. f. Kinderh. **26**:49 (April) 1923.
Syphilis, History of. D. Bardizzi, Policlinico **30**:771 (June 11) 1923.
Syphilis in Etiology of Diabetes. M. Labbe and H. Touflet, Ann. de méd. **13**:307 (April) 1923.
Syphilis in Infants. M. Pinard, Bull. méd. **37**:894 (July 28) 1923.
Syphilis in New-Born, Serodiagnosis of. Esch, Zentralbl. f. Gynäk. **47**:709 (May 5) 1923.
Syphilis, Inadequate Preventive Treatment of. Gouin and Jégat, Ann. d. mal. vén. **18**:368 (May) 1923.
Syphilis, Inherited, Glycosuria in. G. Milani, Riforma med. **39**:485 (May 21) 1923.
Syphilis, Inherited, in Gynecology. E. Nicholson, Prensa méd. Argentina **9**:1005 (May 20) 1923.
Syphilis, Inherited, Prophylaxis of. V. Hutinel, Nourrisson **11**:209 (July) 1923.
Syphilis, Intramuscular Arsenical Treatment of. R. Rabut, Ann. d. mal. vén. **18**:351 (May) 1923.
Syphilis, Iodin in Treatment of. R. E. Jameron, J. Iowa M. Soc. **13**:284 (July 15) 1923.

Syphilis, Late Congenital, Neurosyphilitic Lesions in. E. G. Zabriskie, J. A. M. A. **81:** (Aug. 18) 1923.

Syphilis, Latent, Diagnosis of. W. Schmitt, München. med. Wchnschr. **70:**798 (June 22) 1923.

Syphilis, Latent, Medicolegal Importance of. L. Desclaux, Bull. et mém. Soc. méd. d. hôp. de Paris **47:**1088 (July 13) 1923.

Syphilis, Latent, Obstetrical Experiences with Sachs-Georgi Reaction in Diagnosis of. B. v. Varo, Wien. klin. Wchnschr. **36:**342 (May 10) 1923.

Syphilis, Meinicke's Opacity Reaction for. Meinicke and Grün, Deutsch. med. Wchnschr. **49:**605 (May 11) 1923.

Syphilis, Notification of. Bull. méd. **37:**889 (July 28) 1923.

Syphilis, Obliteration of Superior Vena Cava Due to. Ruitinga, Bull. et mém. Soc. méd. d. hôp. de Paris **47:**602 (April 20) 1923.

Syphilis of Bladder. K. Neuwirt, Cas. lek. cesk. **62:**228 (March 3) 1923.

Syphilis of Bones. J. Weiss, Med. Klin. **19:**716 (May 27) 1923.

Syphilis of Liver, Unusual Forms of. H. Bergstrand, Acta Pædiat. **2:**400 (May 31) 1923.

Syphilis of Ovum, of Fetus and of Membranes and Placenta. Lévy-Solal, Paris méd. **13:**537 (June 16) 1923.

Syphilis of Ponto-Cerebellar Type. Guillain et al., Bull. et mém. Soc. méd. d. hôp. de Paris **47:**605 (April 20) 1923.

Syphilis of Small Vessels of Brain. C. I. Urechia and N. Elekes, Encéphale **18:**240 (April) 1923.

Syphilis of Stomach, Case of. S. F. Weitzner, Am. J. Roentgenol. **10:**537 (July) 1923.

Syphilis of Uterus and Adnexa. B. Portis, Surg., Gynec. & Obst. **37:**37 (July) 1923.

Syphilis, Pentavalent Arsenic Derivative in Treatment of. C. Laurent, Ann. d. mal. vén. **18:**497 (July) 1923.

Syphilis, Prevalence of, in 1922. Renaud and Marechal, Bull. et mém. Soc. méd. d. hôp. de Paris **47:**853 (June 8) 1923.

Syphilis, Preventive Treatment of. J. May, Rev. méd. del Uruguay **26:**213 (May) 1923.

Syphilis, Previous Treatment in 100 Cases of. Leredde and Loiselet, Ann. d. mal. vén. **18:**427 (June) 1923.

Syphilis, Pseudosurgical Tertiary, of Liver. Denéchau et al., Bull. et mém. Soc. méd. d. hôp. de Paris **47:**556 (April 20) 1923.

Syphilis Refractory to Arsphenamin. M. Jessner, M. Klin. **19:**857 (June 24) 1923.

Syphilis, Rocking Slide Precipitation Test (S. G.) for. A. H. Priestley, Lancet **1:**1260 (June 23) 1923.

Syphilis, Serodiagnosis of. Handorn and Georgi, Zentralbl. f. Gynäk. **47:**898 (June 9) 1923.

Syphilis, Serodiagnosis of, in Rabbits. Sachs and Georgi, Klin. Wchnschr. **2:**883 (May 7) 1923.

Syphilis, Serum Reactions in Bismuth Treatment of. E. Nathan and H. Martin, Klin. Wchnschr. **2:**1016 (May 28) 1923.

Syphilis, Stigmata of Tardy Inherited. B. Barker Beeson, Paris méd. **13:**565 (June 30) 1923.

Syphilis, Treatment of. O. Salomon, München. med. Wchnschr. **70:**631 (May 18) 1923; D. Lees, J. State Med. **31:**251 (June) 1923.

Syphilis, Treatment of, by Bismuth Salts. L. P. Carvell, M. J. Australia **2:**8 (July 7) 1923.

Syphilis, Treatment of, in Dannemora State Hospital. T. H. Reed, New York State J. Med. **23:**312 (July) 1923.

Syphilis, Unsuspected, Rôle of in Otolaryngology. J. E. Mulsow, Wisconsin M. J. **22:**68 (July) 1923.

Syphilis, Use of Retroplacental and Umbilical Vein Blood in Diagnosis of. F. Klee and E. Hofmann, Monatschr. f. Geb. u. Gynäk. **62**:21 (Feb.) 1923.

Syphilis, Use of Wassermann Reaction in Diagnosis of. G. O. Scott and G. H. J. Pearson, Canad. M. A. J. **13**:501 (July) 1923.

Syphilis, Value of the Kahn Precipitation Test for. H. K. Detweiler, J. A. M. A. **81**:815 (Sept. 8) 1923.

Syphilis, Vertebral, of Scoliosis Type. Roger et al., Encéphale **18**:305 (May) 1923.

Syphilitic Anergy. M. Lelong, Paris méd. **13**:575 (June 30) 1923.

Syphilitic Child, Problem of. G. D. Kettlewell, J. State Med. **31**:260 (June) 1923.

Syphilitic, Chronic Rheumatism in. Carnot and Blamoutier, Bull. et mém. Soc. méd. d. hôp. de Paris **47**:833 (June 8) 1923.

Syphilitic Disease of the Intestines. R. Bensaude and L. Rivet, Médicine **4**:750 (July) 1923.

Syphilitic Disease of the Lung. E. Sergent and H. Durand, Bull. l'Acad. de méd. **89**:478 (May 1) 1923.

Syphilitic Disease of the Stomach. R. E. Leone, Riforma med. **39**:625 (July 2) 1923

Syphilitic, Encephalitis, Latent. Cestan and Rister, Ann. d. mal. vén. **18**:417 (June) 1923.

Syphilitics, Erythromelalgia in Two. E. May and P. Hillemand, Bull. et mém. Soc. med. d. hôp. de Paris **47**:1024 (June 29) 1923.

Syphilitic Fibrosis of Lungs, Diffuse, Extreme Case of. F. P. Weber, Brit. M.J. **1**:1049 (June 23) 1923.

Syphilitic Flocculation, Inhibiting Influence of, on Saponin Hemolysis. Tebbe, Arch. f. Kinderh. **72**:257 (May 19) 1923

Syphilitic Infants, Puncture of Sinus and Injections of Arsphenamin in. W. Schonfeld, München. med. Wchnschr. **70**: (May 4) 1923.

Syphilitic Meningoradiculitis with Froin's Syndrome. Ardin-Delteil et al. **47**: 635 (April 2) 1923.

Syphilitics, Old, Fibrous Pulmonary Tuberculosis in. E. Sergent and P. Cottenot, Bull. l'Acad de med. **89**:485 (May 1) 1923.

Syphilitic Origin, Probable, of heorectovesical Fistula. E. G. Ballenger and W. R. Smith, Southern M. J. **16**:532 (July) 1923.

Syphilitics, Pregnant, Effects of Arsphenamin on. Pomaret and Benoit, Bull. et mém. Soc. méd. d. hôp. de Paris **47**:699 (May 11) 1923.

Syphilitic Serum Reaction. R. Mashimo, Nav. M. Bull., Tokyo **40**:5 (May) 1923.

Syphilitic Stricture of Rectum. G. Friedel, Paris méd. **13**:384 (April 28) 1923.

Tabes and Aneurysm, Fracture of Leg with. H. Engel, Med. Klin. **19**:875 (June 24) 1923.

Tabes and General Paresis, Problem of. Raecke, Klin. Wchnschr. **2**:958 (May) 21) 1923.

Tabes, Arsenical Mercurial Treatment of. J. A. Barre, Bull. méd. **37**:769 (June 30) 1923.

Tabes, Biologic Tests in. T. Alajouanine and R. Marquézy, Bull. méd. **37**:778 (June 30) 1923.

Tabes Dorsalis, Diagnosis and Management of. F. P. Currier, J. Michigan M. Soc. **22**:304 (June) 1923.

Tabes, Gastric Crisis in. D. Danielopolu, Bull. et mém. Soc. méd. d. hôp. de Paris **47**:1102 (July 13) 1923.

Tabes, Multiple Joint Lesions in. T. Alajouanine, Bull. méd. **37**:771 (June 30) 1923.

Tabetic Arthropathy in Ankle After Trauma. H. Engel, Med. Klin. **19**:834 (June 17) 1923.

Tryparsamid. Treatment of General Paralysis by: Penetration of Drug into Cerebrospinal Fluid. F. W. Mott, Brit. M. J. **2**:24 (July 7) 1923.

Tuberculosis, Fibrous, Pulmonary, in Old Syphilitics. E. Sargent and P. Cottentot, Bull. l'Acad. de méd. **89**:485 (May 1) 1923.

Tuberculosis, Pulmonary, and Syphilis. F. Koester, Ztschr. f. Tuberk. **38**:94 (April) 1923.

Uterus and Adnexa, Syphilis of. B. Portis, Surg. Gynec. & Obst. **37**:37 (July) 1923.

Venereal Disease, Advice Stations for. H. Loeb, München. med. Wchnschr. **70**:781 (June 15) 1923.

Venereal Diseases in the Occupied Rhine Provinces. L. v. Zumbusch, München. med. Wchnschr. **70**:605 (May 11) 1923.

Venereal Prophylaxis. E. S. Browning, J. Michigan M. Soc. **22**:325 (Aug.) 1923.

Wassermann and Kahn Precipitation Tests Compared in 900 Cases. A. D. Dulaney, Am. J. Pub. Health **13**:472 (June) 1923.

Wassermann Reaction. K. Eskuchen, München. med. Wchnschr. **70**:527 (April 27) 1923.

Wassermann Reaction in the Cerebrospinal Fluid. P. Fornara, Policlinico **30**: 830 (June 25) 1923; V. Kafka, Med. Klin. **19**:906 (June 30) 1923.

Wassermann Reaction, Negative, in Rabbit Cerebrospinal Fluid, Cause of. F. Plaut and P. Mulzer, München. med. Wchnschr. **70**:762 (June 15) 1923.

Wassermann Reactions, Spontaneous Fluctuations in. J. R. Mørch and T. E. Hess Thaysen, Ugesk. f. Læger **85**:373 (May 24) 1923.

Wassermann Reaction, Standard. R. Ottenburg and I. Wisler, J. Lab. & Clin. Med. **8**:690 (July) 1923.

Wassermann Reaction, Use of, in Diagnosis of Syphilis. G. O. Scott and G. H. J. Pearson, Canad. M. A. J. **13**:501 (July) 1923.

Wassermann Tests of the Blind and Deaf-Mutes. H. Boas, Hospitalstidende **66**:357 (May 9) 1923.